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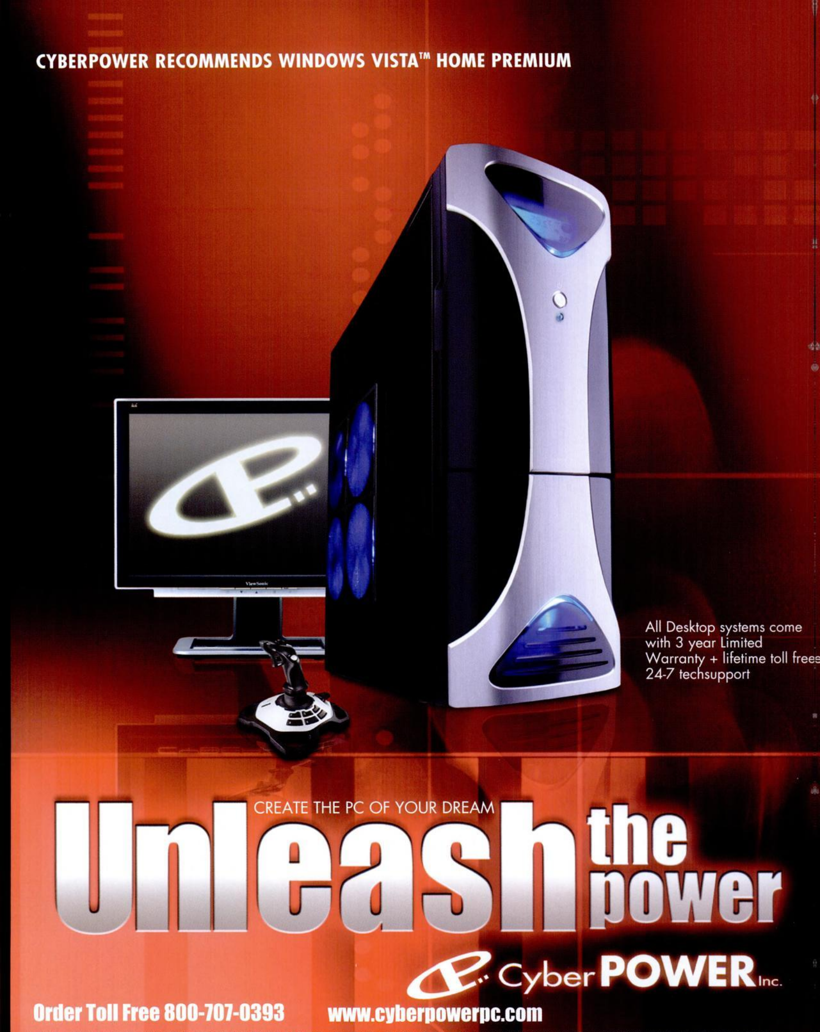
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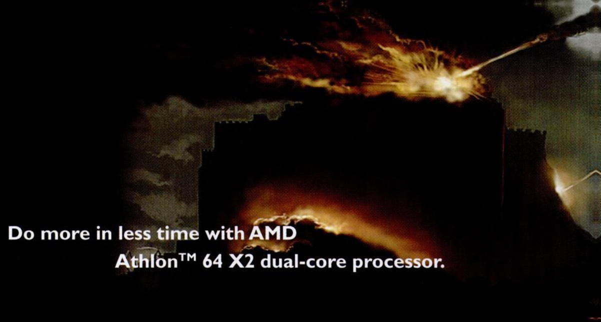

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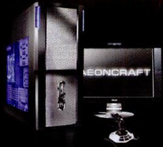

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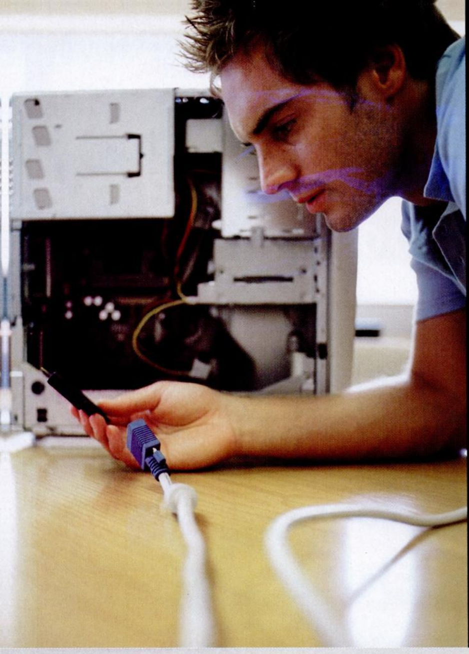

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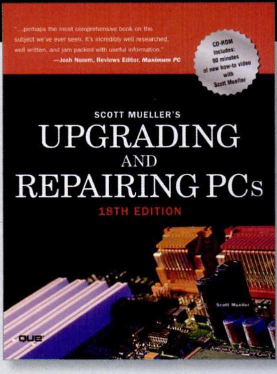

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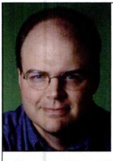

Release Notes

Mr. Fix-It

I've never been extremely proficient with tools—at least when it comes to being a handyman around the house. No, when something breaks, I usually either have no clue how to fix it, or I don't have the right tools (or even know what the *right* tool looks like).

Typically, I have to go out in my neighborhood and ask one of the "fellas" for some advice and borrow his tools, which usually results in a fair bit of ribbing at my expense, naturally. However, I figure that what I save in hardware investments is probably worth it (though my pizza and beer gratuity expenses occasionally get out of hand).

It would truly be embarrassing for me if those same neighbors didn't slink over to my door every time one of their PCs hiccups. Years of poking around inside my PCs' innards, resolving hardware failures, and fiddling with just about every PC diagnostic/anti-spyware/firewall utility out there has finally paid off with a little turnabout.

Those same neighbors that can disassemble and reassemble their trucks' carburetors (they **all** have trucks) blindfolded, put in their own sprinkler systems, change their own oil, and build their own additions get absolutely panicked when it comes time to do something as simple as put a new hard drive in their PC or troubleshoot a virus infestation.

Yes, it's good to occasionally feel the power of "having the answers," and you can, too, after digesting all the PC troubleshooting goodness we've packed into this issue. (Or, if you're a certain one of my neighbors, you can stop knocking sheepishly on my door at 2 a.m. because you can't get on an internet site you need for "work.")

Good PC health starts with a solid prevention strategy – an ounce of prevention... yadda yadda. Our "Safeguard Your PC" and "Fix Your PC" stories will give you the tools you need to ensure your PC lives a long and carefree life, performing at the top of its game until it's replaced.

However, no matter how safe you are your PC will eventually experience some type of medical emergency, be it a dreaded Blue Screen of Death, hard drive meltdown, memory failure, or malware infection. We show you how to handle 10 of the most common, and nasty, PC maladies—see "10 PC Disasters" on page 28.

The rest of the issue is equally jam-packed with a wide variety of PC fix-it and troubleshooting advice, tips, and tools. Time to roll up your sleeves and earn that Mr. (PC) Fix-it title!

—Steve Klett

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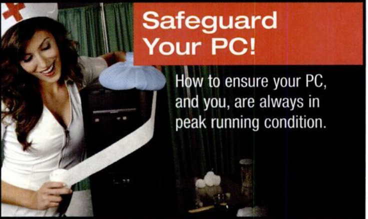

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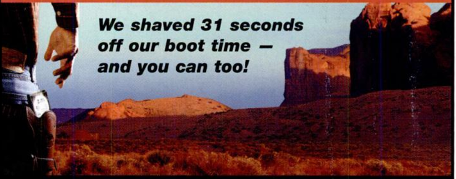
68 **FASTEST BOOT IN THE WEST**
We shaved 31 seconds off our boot time – and you can too!



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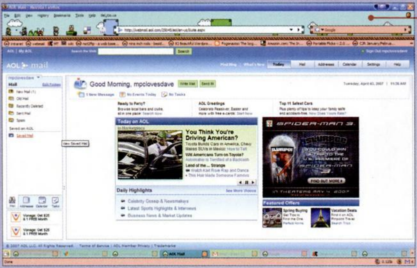
AOL Mail **vs.** Gmail **vs.** Hotmail **vs.** Yahoo Mail

Trying to find the best web-based email provider is like trying to pound a nail into a board… using your forehead. It's not that the Internet landscape is lacking in contenders; rather, there's such a seemingly endless batch of them to slog through that it's a maddening chore to choose the best one.

So what's an Internet newbie to do? In short, read this article. We've rounded up the four most popular services on the net and pitted them against each other in an epic email deathmatch. Can Yahoo Mail frag Gmail? Will MSN Hotmail just turtle in the corner and pick off the strays? Does AOL Mail stand a chance or will it resort to button-mashing?

And this isn't just a one-note melee. We're letting the email applications slug it out across four categories. After all, space isn't everything; it's all about the experience. Now if only we could find the people who have already taken all the MaximumPC user IDs….

BY DAVID **MURPHY**



AOL | My AOL
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Search
AOL mail
Today
Mail
Addresses
Calendar
Settings
Help
mpclovesdave
Mail
Edit Folders
New Mail (1)
Old Mail
Recently Deleted
Sent Mail
Spam
Saved on AOL
Saved Mail
View Saved Mail
Write Mail
Send IM
Mail
Addresses
Calendar
Tasks
SPIDER-MAN 3.
FIND OUT MORE
IN THEATERS MAY 4 2007
AOL Mail
Done

Good Morning, mpclovesdave

Tuesday, April 03, 2007 | 11:36 AM

1 New Message | No Events Today | No Tasks

Ready to Party? Browse local bars and clubs, all in one place: Search Now

AOL Greetings Celebrate Passover, Easter and more with free e-cards: Start Now

Top 11 Safest Cars Plus plenty of tips to keep your family safe and accident-free. How Does Yours Rate?

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AOL MAIL
www.aol.com

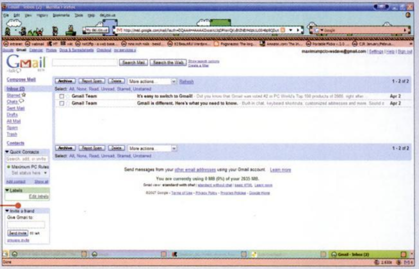
round 1 **CAPACITY** Gone are the days when email accounts were limited to megabyte capacities. Now, 1GB seems to be the de facto baseline for anyone launching into the webmail business.

AOL Mail claims it offers unlimited storage, but a user is limited to 1,000 pieces of new mail in the ol' inbox at any given time, with a 16MB limit per message. After one hits the big wall, all new messages are returned to sender. On the surface, that seems better than Hotmail's paltry 1GB of storage, Gmail's 2.83GB (and counting) of storage, and Yahoo's soon-to-be-but-not-as-of-this-article's-creation increase to unlimited capacity.

But we'll take Gmail's unlimited message capacity over unlimited megabytes. A typical email account can easily push past 1,000 messages (Spam and archives!) while still staying under 3GB or so. **WINNER: GMAIL**

round 2 **AESTHETICS** Checking your email shouldn't cause eyestrain. And you shouldn't have to pull out a manual or wade through a cumbersome help file just to figure out where to click half the time. With that said, none of our contenders achieved the holy grail of online email—an advertising-free setup that's painless to use. But some did achieve meritorious marks for usability, while others made us bang our heads against the keyboard in frustration.

When it comes to the cleanest interface, Gmail wins by leaps and bounds due to the simple fact that when you want your email, that's what you get. The other three services spam you with a "home page" full of advertisements, prompts, and queries—it's just information overload. With Gmail, you get your email. That's it. Can you say winner by default? **WINNER: GMAIL**



Gmail
Search Mail
Search the Web
Compose Mail
Inbox (2)
Starred
Chats
Sent Mail
Drafts
All Mail
Spam
Trash
Contacts
Quick Contacts
Maximum PC Rules
Set status here
Add contact
Show all
Labels
Edit labels
Invite a friend
Give Gmail to:
Send Invite
Archive
Report Spam
Delete
More actions…
Refresh
Gmail - Inbox (2)
Done

maximumpclovesdave@gmail.com | Settings | Help | Sign out

Select: All, None, Read, Unread, Starred, Unstarred — 1 - 2 of 2

☐	Gmail Team	**It's easy to switch to Gmail!** - Did you know that Gmail was voted #2 in PC World's Top 100 products of 2005, right after	Apr 2
☐	Gmail Team	**Gmail is different. Here's what you need to know.** - Built-in chat, keyboard shortcuts, customized addresses and more. Sound c	Apr 2

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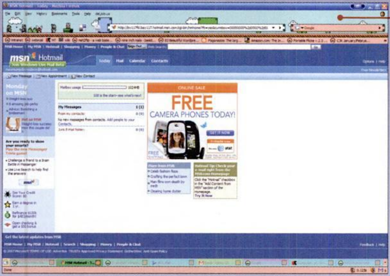
www.gmail.com



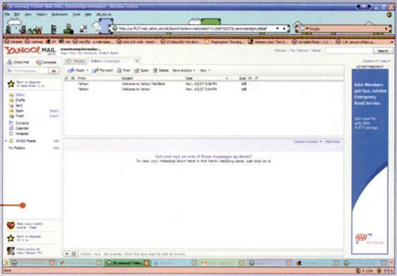
MSN HOTMAIL
www.hotmail.com

round 3 **FEATURES** This is where the contest gets ugly. We're going to start by eliminating the pathetic email clients that charge for POP3 and SMTP access—the ability to pull and send messages through your favorite third-party client (like Outlook or Thunderbird). We're looking at you, Hotmail and Yahoo Mail; that's just weak.

While AOL Mail offers in-browser features comparable to Gmail's best, like a calendar and task manager, the sheer weight of Google's extended offerings puts it on top. One Gmail account gets you access to every Google service under the sun: Talk, Picasa, Documents and Spreadsheets, etc. There is no external integration through AOL Mail, save for the ability to send and receive Instant Messages. Feh. **WINNER: GMAIL**

round 4 **CUSTOMER SERVICE** We're going to lead this one off with a simple statement: AOL, you suck. Seriously. Of all the email providers in this article, AOL is the only company that refuses to give users a means of contacting them with technical questions... unless, of course, you cough up at least $10 a month for the company's full ISP service. Say it with us now: boo-urns.

That said, the three remaining contenders have fairly comparable forms of from-the-company customer service, but only Yahoo and Gmail offer extended forums, which are nice ways to get quick fix-it replies from other email enthusiasts. We frown at Hotmail for having only a basic FAQ-style help center. **WINNER: GMAIL AND YAHOO**



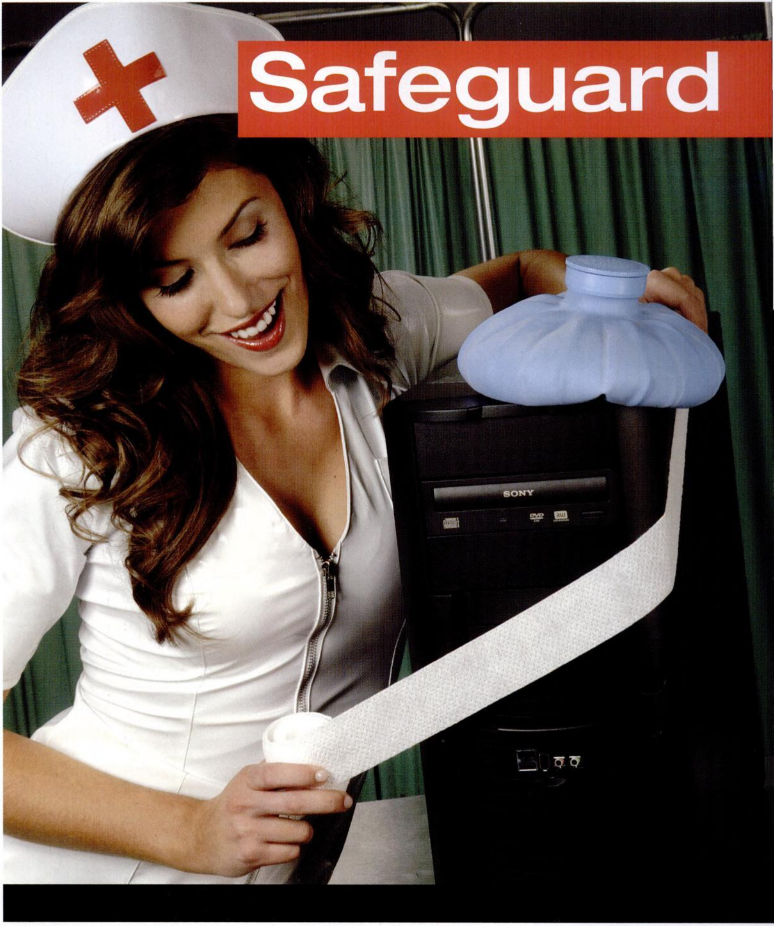
YAHOO MAIL
www.yahoo.com

And the Winner Is...

Although it offers a paltry 2-point-something-something gigabytes of storage (the number constantly increases), Gmail gets the win as the most pleasantly perfect email service on today's Internet. Underneath the service's simplicity and plain exterior hides a powerful engine, one that's even opened the external modding community to the Google experience. With the right software, you can add your Google space as a network drive or transfer your Outlook .pst file to Gmail, and with the help of prewritten GreaseMonkey config scripts, you can customize the crap out of the website. No stone has been left unturned by net hackers.

Gmail remains tied to Google's AdSense program, but unlike the other email services we tested, the text-only Gmail advertisements are unobtrusive and—most importantly—not annoying. There's no home page full of ads, graphics, and news you have to crawl through to get to that lovely letter from your mum. Gmail offers just a plain ol' email experience, and that's great. It couldn't possibly be any easier. MPC

Safeguard

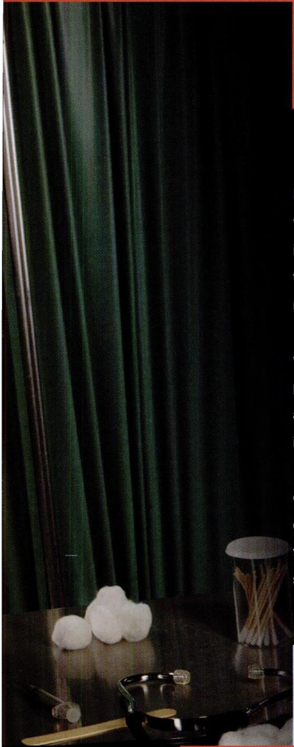


BY JOE CASSELS

Your PC!

Careful as you may be, odds are that your PC could be performing even better. It's time to give your rig a full medical exam.

(Rubber gloves are optional.)



PC support staff everywhere must wince when they hear the phrase "It worked fine right up to the moment it completely crashed." The sad fact is, that sums up many people's approach to computers: they expect them to either work or not, and they rarely understand the importance of maintenance.

We're happy to service a car every 10,000 miles or so, but the faithful workhorse PC has to get by without much attention. Admittedly, a computer failure probably won't result in life or death, but your system probably contains valuable data and you could be greatly inconvenienced by its loss.

As with car maintenance, looking after a PC is about keeping an eye out for tell-tale signs of trouble, and then fixing them before they become critical. It's about treating the illness before it becomes a fatality. To treat the illness, you need to detect it, which is why we talk about the need to safeguard your PC.

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Ontrack's Data Advisor Trial

Performance Test

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Belarc Advisor

Scream Saver

Hardware

We start by examining hardware. Components don't last forever, and it's better to replace them when they're on their way out than once they've given up the ghost. Some regular monitoring is a good idea, especially for equipment with moving parts, such as hard drives or system fans. We'll show you how you can continuously monitor a hard drive so you know when it's running into problems in time to back up your data and replace the unit. Temperature is a clear indication that something's wrong, so we'll show you how to check that your components aren't overheating.

You can run numerous diagnostic tests on your hardware; we've picked out those that are most useful and those you can apply for free. By rigorously testing your memory, you can avoid crashes and maintain performance. Using trial and free software, you can also test your display, sound, processor, and hard-drive performance.

Software

Windows can highlight various signs of illness, whether they're caused by malware (such as viruses, Trojans, and spyware) or by the wear and tear of long-term use. Combating data fragmentation, file system errors, and Registry bloat is crucial to preserving your system. We'll show you how to verify you have the correct system files and the right device drivers in their most up-to-date versions, and how to ensure you're not running unnecessary startup processes.

Third-party software can be helpful, especially in reducing the time you need to spend maintaining system health. That's why we demonstrate how applications like Norton SystemWorks can be beneficial. However, it's not necessary to invest in them to keep your computer in tip-top shape. You can manage that with a few free utilities and a willingness to get your hands dirty.

It's not just computer health that we're concerned with; you should also look after yourself when using a PC. As odd as it may seem, improper use can increase the likelihood of some long-term, serious conditions. Eye strain and repetitive strain injuries are increasingly common among computer users. And because many different people may handle communal or work computers, their mice and keyboards can act as disease carriers. To stave off these various issues, we'll provide advice about posture, work breaks, hygiene, and tools that can promote your health while you use a machine.

We've kept you in the waiting room long enough — the doctor will see you now.

Hardware Health

How to make sure your PC's components are functioning properly

If your PC's building blocks aren't working properly, you could end up with sluggish performance, crashes, and data loss. Clearly, it's a good idea to inspect your hardware every so often to ensure it's functioning.

Check your computer and case. Is it dusty? Can you see dust hanging out of the power supply? If so, vacuum it up or use compressed air to dislodge it. Are the fans noisy? This could indicate poor cooling. Similarly, a noisy hard drive may be on its last legs. Don't rely on these first-glance tests for diagnosis, but do use them to help you decide whether to investigate further.

Temperature

Overheating is a significant problem for hardware; that's why your case is packed with cooling fans. A temperature spike could easily take out a hard drive, processor, or stick of RAM. Some cases provide a temperature reading on the front panel; these may give some guidance, but they're notoriously unreliable. Check out the temperature of key components by entering the BIOS, which you can do by rebooting your PC and repeatedly pressing [Del] (or whatever key combination is displayed during boot).

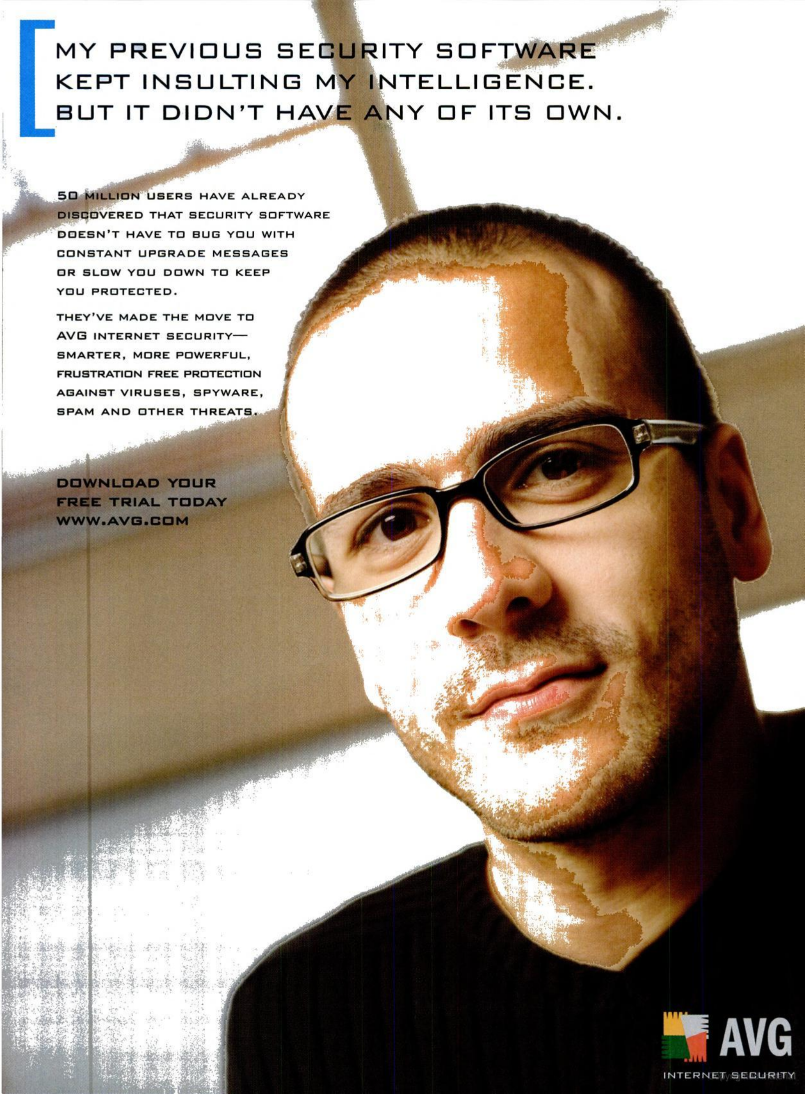
BIOSes vary, but you'll usually find the necessary information under PC Health. This section enables you to see key information such as CPU temperature, system temperature, and fan speeds. If the temperature is too high, consider spacing out hard drives, cleaning the fans, or investing in more cooling. You can also set levels at which the BIOS can take action to preserve its components. CPU warning temperature enables you to set a temperature at which you're warned if things get too hot, giving you the chance to take suitable action such as shutting down the computer. CPU shutdown temperature is the point at which the BIOS shuts down the processor.

While in the BIOS, it's a good idea to check that SMART monitoring for your hard drives is supported and enabled. You'll find this setting in the standard CMOS setup. See the boxout (page 18) to find out how to take advantage of SMART technology to warn you if your hard drive is likely to fail.

5 **Quick** Tips

1. If you can't get a display when your PC boots but you can hear BIOS beeps, use them to diagnose the problem. You'll find a full list at **www.amptron.com/html/bios.beepcodes.html.**
2. Combat chip creep by removing and reseating your RAM and expansion cards every year, and ensure that they're clipped or screwed into place.
3. If you have multiple hard drives, make sure they're properly spaced out inside your case. This will help prevent them from overheating.
4. You can extend the lifespan of a hard drive by buying a hard-drive cooler. A cheap and cheerful one will cost around $10; expect to pay $50-plus for a quiet model.
5. When removing dust from components, remember that static charge can damage them. It's best to use compressed air rather than a featherduster.

Fact! **A survey by Falcon Safety Products found that dust and dirt caused 70 percent of keyboard failures and 85 percent of printer breakdowns**



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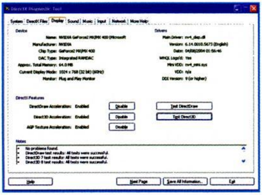
Diagnose DirectX

Microsoft's built-in diagnostics can test your PC's multimedia muscle



Device
Name: NVIDIA GeForce2 MX/MX 400 (Microsoft
Manufacturer: NVIDIA
Chip Type: GeForce2 MX/MX 400
DAC Type: Integrated RAMDAC
Approx. Total Memory: 64.0 MB
Current Display Mode: 1024 x 768 (32 bit) (60Hz)
Monitor: Plug and Play Monitor

Drivers
Main Driver: nv4_disp.dll
Version: 6.14.0010.5673 (English)
Date: 04/08/2004 01:56:46
WHQL Logo'd: Yes
Mini VDD: nv4_mini.sys
VDD: n/a
DDI Version: 9 (or higher)

DirectX Features
DirectDraw Acceleration: Enabled
Direct3D Acceleration: Enabled
AGP Texture Acceleration: Enabled

Notes
- No problems found.
- DirectDraw test results: All tests were successful.
- Direct3D 7 test results: All tests were successful.
- Direct3D 8 test results: All tests were successful.

Each DirectX test ensures you can see or hear particular multimedia elements

Click Start > Run, type dxdiag into the Open bar, and click OK to start the DirectX diagnostic tool and show a summary of your setup. Tick "Check for WHQL digital signatures" to ensure that your DirectX files are signed. Click Next Page to list all the DirectX files found on your system. Any problems are listed in the bottom pane. The next page tests your display functions. Click Test DirectDraw and follow the instructions. Do the same for Direct3D.

Move to the Sound tab. Use the slider to determine the amount of hardware acceleration to use. Now click Test DirectSound. This plays a sound effect in a number of different formats. Confirm that you can hear each sound by pressing Yes after it has played. This will determine your system's ability to produce mono, stereo, and surround sound. Move to the Music tab. The Music ports show the sound equipment that you have corrected and its ability to play music. Click Test DirectMusic. You'll hear a soundtrack, which may be played several times. Press Yes to confirm that you've heard it.

Diagnostics

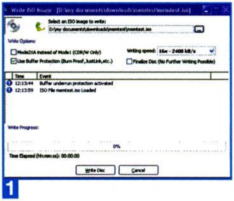
Running diagnostic software is a good way to check over hardware that you can't access in any other way. Various commercial applications are available, including CheckIt Diagnostics, which you can obtain as a standalone application or as part of Norton SystemWorks 2006. (The standalone version costs around $75. Norton SystemWorks costs $100 and includes numerous other utilities; it's available from **www.symantec.com**.)

Install and launch the program. Choose System Information. Each tab displays detailed data on a key component of your PC; select each one to learn more about your computer. Choose one of the tests from the list in the lefthand pane. Start with the processor test. Click Start. The series of processor tests runs, and as they finish, the results are displayed. Select a different test, such as the Audio Test. Check the options that you want to run and click Start. Wait for the results. Work through the different tests to check each part of your PC until you've completed them all.

You can obtain similar diagnostic results by using a combination of trial programs. TuffTest Lite (**www.tufftest.com/free.htm**) runs a number of basic system tests, but it won't check hard-drive performance or RAM above 8MB. (You can fill in these gaps with the programs we mention below.) Download and install the program. It creates a boot floppy — unfortunately, there isn't a CD version — from which you start your PC and the battery of tests runs automatically.

Now to fill in the gaps for RAM and your hard drives. Memtest86 will test any quantity of RAM and is available for free. (See the "Check Your Memory" sidebar for details.) You'll need a CD-burning program such as CDBurnerXP Pro — available for free from **www.cdburnerxp.se** — to burn the ISO image to CD. Alternatively, you can obtain a floppy version of the program from **www.memtest86.com/memt32.zip**. (And it's on the disc bundled with this issue!)

Check Your Memory


Write ISO Image - [D:\my documents\downloads\memtest\memtest.iso]
Write Disc
Cancel

Select an ISO image to write:
D:\my documents\downloads\memtest\memtest.iso

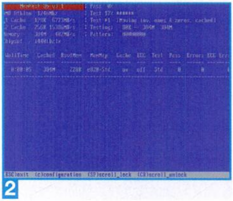
Write Options:
☐ Mode2/XA instead of Mode1 (CDR/W Only)
☑ Use Buffer Protection (Burn Proof, JustLink, etc.)
Writing speed: 16x - 2400 kB/s
☐ Finalize Disc (No Further Writing Possible)

Time	Event
12:13:44	Buffer underrun protection activated
12:13:59	ISO File memtest.iso Loaded

Write Progress:
0%
Time Elapsed (hh:mm:ss): 00:00:00

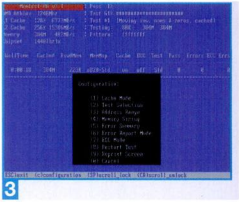
1

Grab the Memtest86 ISO image off the disc. Launch CDBurner XP Pro and choose File > Write Disc from ISO file. Browse to the ISO image and click Write Disc. When it's ready, remember to label it.



2

Restart your computer so it boots from the CD that you just made. Memtest launches and immediately begins testing your system. Let the test run to the end. If it reports memory errors, try reseating or replacing your RAM modules.



3

You can configure Memtest86 by pressing [C] while the program is running. This opens a menu that enables you to choose which tests to run and specify the upper and lower limits of the RAM you want to examine.

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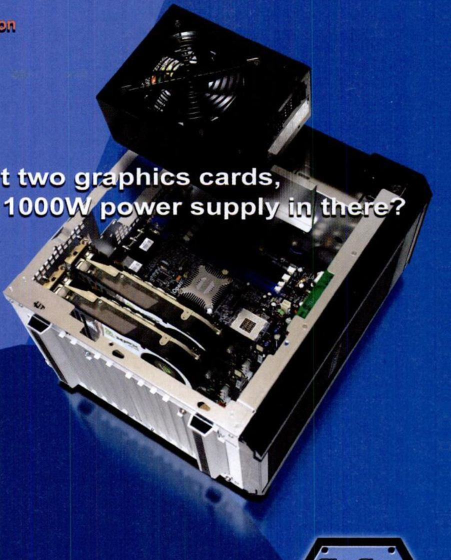
Are you sure you can fit two graphics cards,
two 120mm fans, and a 1000W power supply in there?



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For your hard drive, if you have a floppy-disk drive, you can use Ontrack's Data Advisor trial to check over your RAM and hard drive. Browse to **www.ontrack.com/dataadvisor** and follow the link marked Demo (or again, just pop in the shiny disc included with this issue) to download the 30-day trial. Launch the download file and insert a floppy disk into your drive. The program creates a boot disk, which you can use to start your PC. Once you've booted from the disk, click OK and Next to start the battery of tests.

The initial test examines your system memory — writing to and reading from different areas to see if you have any bad RAM. Then it checks your hard-drive SMART capability. The 90-second test samples areas of your hard drive to ensure that your data is intact. This is followed by an examination of your file structure and a full surface scan, if you selected it. Once the process is complete, Data Advisor presents its findings.

Benchmarking

Benchmarking software will show you how efficient your hardware is. One such program is Performance Test, produced by PassMark Software (**www.passmark.com/products/pt.htm**). Available for a 30-day trial and $24 registered, this powerful application compares the performance of your PC against similar machines. You can use it to measure the effects of any configuration changes and upgrades that you make to your PC.

To run the tests, select Extra Features > Performance Test. Each icon relates to a benchmarking test on an area of your PC. To run the full suite of processor tests, click the CPU icon on the toolbar. To select a single test, choose the appropriate one from the Test Menu. The results are then displayed and you can print or save the results as a new baseline.

You can use baselines to compare your computer against similar systems or the average performance of a range of commercially available PCs. You can also set your own baseline to compare your PC's performance before and after an upgrade or a major change in configuration — letting you see if your system's speed has improved.

How Healthy Is Your Drive?

Be SMART and find out!

Eventually, hard disks need to be replaced. To make it easier to know when you need a new drive, self-monitoring, analysis, and reporting technology (SMART) was developed. All current drives use this technology, and with the right software, your PC can keep you updated as to your drive's health.

HDD Life is a SMART monitoring program. Snag it from the disc, or browse to **www.hddlife.com** and opt to download the shareware program. Install and launch it. The program examines your hard drive and reports back health, temperature, and performance findings. To configure HDD Life, choose File > Options. Under General options, you can specify how frequently it checks your drives, the units it uses for temperature, and whether it starts up with Windows. Select Tray Display to alter the way the program appears. You can choose to show drive temperature, the program icon, or the health status.

If your hard drive is in danger of failure, HDD Life sounds a siren and pops up an alert. Correct the problem if you can, or take this opportunity to back up all your data.

Software Health

How to make sure that your software is keeping your computer in shape

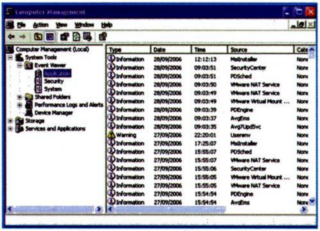
Having ensured that your hardware is in good condition, you should turn your attention to your software and to Windows in particular. Make sure that you have automatic updates turned on so that you have the latest Windows patches in place.

Right-click My Computer and select Properties. Move to the Automatic Updates tab and select the Automatic (recommended) setting. If you also use Microsoft programs, regular visits to Microsoft Update are a good idea as well.

You can't have a healthy PC without antivirus and anti-spyware utilities. If you haven't bought them, try AVG (**www.free.grisoft.com**) for virus protection and Spybot (**www.safer-networking.org**) for spy-

Welcome to the Event Viewer

How to keep tabs on your PC's hiccups



Type	Date	Time	Source	Cate
Information	28/09/2006	12:12:13	MsiInstaller	None
Information	28/09/2006	09:03:51	SecurityCenter	None
Information	28/09/2006	09:03:51	PDSched	None
Information	28/09/2006	09:03:50	VMware NAT Service	None
Information	28/09/2006	09:03:49	VMware NAT Service	None
Information	28/09/2006	09:03:49	VMware Virtual Mount ...	None
Information	28/09/2006	09:03:39	PDEngine	None
Information	28/09/2006	09:03:37	AvgEms	None
Information	28/09/2006	09:03:35	Avg7UpdSvc	None
Warning	27/09/2006	22:20:01	Userenv	None
Information	27/09/2006	17:25:07	MsiInstaller	None
Information	27/09/2006	15:55:07	PDSched	None
Information	27/09/2006	15:55:07	VMware NAT Service	None
Information	27/09/2006	15:55:06	SecurityCenter	None
Information	27/09/2006	15:55:05	VMware Virtual Mount ...	None
Information	27/09/2006	15:55:05	VMware NAT Service	None
Information	27/09/2006	15:54:54	PDEngine	None
Information	27/09/2006	15:54:54	AvgEms	None

Event Viewer's alerts will indicate that something's not functioning properly

Event Viewer is a utility that comes as part of Windows XP. It logs program activity, system events, and security issues. You can use the program to gather more information about the way your computer is working and to spot software problems. It also enables you to ensure your PC is secure. Regularly monitoring its logs is a good way to spot problems-in-the-making.

Click Start and right-click My Computer. From the drop-down menu, choose Manage to launch the Computer Management console. On the lefthand side, select Event Viewer to access logs for Applications, Security, and the whole system. Select one of the logs and double-click it to see each recorded event. Events are listed with the most recent one first; errors are flagged with an icon showing a white cross on a red background. Right-click your chosen event and choose Properties. The dialog presents details of the event, including a brief description of what happened, plus a link to further information (if available). Click the copy icon to transfer this information to the clipboard.

To examine a large log file, copy it to the clipboard and paste it into Notepad or Wordpad. You can now use the Find Next tool on the Edit menu to locate specific items of interest.

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ware. (Both are on this issue's disc — we sense a trend!) Keep them up-to-date and run regular scans.

System files

Ensure that you have all the key Windows system files in place and that none are corrupted. Windows has a command-line tool called System File Checker, or SFC, that will help you do this. Click Start > Run and enter cmd in the open bar. Click OK. Type sfc /scannow and press [Return]. Keep your Windows CD on hand, as you may need it if any of the system files have changed. If there are changed or missing files, they'll be replaced by those on the CD. Consider running an SFC scan every couple of months.

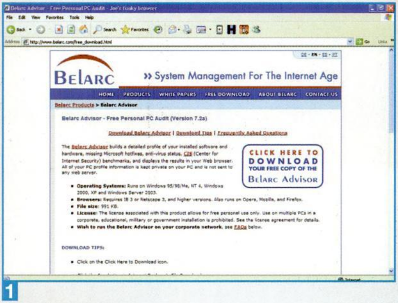
Unnecessary startup entries can result in scads of unused programs running continuously in the background, which bogs down your entire system. Use MSConfig to find out what's running and to work out if you can remove any of these programs. Choose Start > Run and type msconfig into the Open bar. Click OK. This launches the system-configuration utility that enables you to investigate startup-list entries.

You can disable all of them by choosing Diagnostic Startup, or opt for Selective Startup to enable or disable individual items. Move to the Startup tab and disable a startup-list entry by clearing its box. Now reboot to see if its removal affects Windows. If it does, return to MSconfig and reinstate it. For a general Startup investigation, disable all entries and enable them one by one.

Once you know which entries you can do without, find out

Fact! **Many people avoid error-checking their hard drives because they think it takes too long. Why not run it overnight or during a coffee break?**

Belarc Advisor Sees All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>> System Management For The Internet Age

Belarc Products > Belarc Advisor

Belarc Advisor - Free Personal PC Audit (Version 7.2a)

Download Belarc Advisor | Download Tips | Frequently Asked Questions

The Belarc Advisor builds a detailed profile of your installed software and hardware, missing Microsoft hotfixes, anti-virus status, CIS (Center for Internet Security) benchmarks, and displays the results in your Web browser. All of your PC profile information is kept private on your PC and is not sent to any web server.

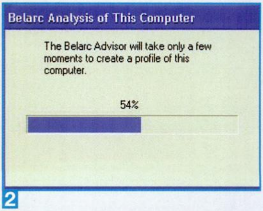
- **Operating Systems:** Runs on Windows 95/98/Me, NT 4, Windows 2000, XP and Windows Server 2003.
- **Browsers:** Requires IE 3 or Netscape 3, and higher versions. Also runs on Opera, Mozilla, and Firefox.
- **File size:** 991 KB.
- **License:** The license associated with this product allows for free personal use only. Use on multiple PCs in a corporate, educational, military or government installation is prohibited. See the license agreement for details.
- **Wish to run the Belarc Advisor on your corporate network**, see FAQs below.

DOWNLOAD TIPS:

- Click on the Click Here to Download icon.

1

Browse to www.belarc.com and follow the link marked Free Download. Click the Download button and specify a download location. Once complete, launch the advisor.exe file and follow the installation in the usual way. (Alternatively, you can just pop in the CD that came with this issue and follow the prompts.)



Belarc Analysis of This Computer

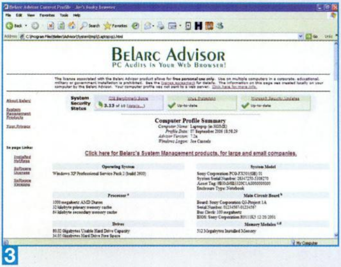
The Belarc Advisor will take only a few moments to create a profile of this computer.

54%

2

Agree to the end-user license. The program should launch immediately. If it doesn't, double-click the new shortcut on your desktop. Belarc Advisor examines your PC, collecting information about your hardware and software.

Once it's complete, the results are displayed as a local Web page. These aren't transmitted across the Internet, so your privacy is upheld. You'll find hardware and software displayed in several different categories.


Belarc Advisor Current Profile - Joe's funky browser
File Edit View Favorites Tools Help
Back Search Favorites
Go Links
My Computer

BELARC ADVISOR

PC AUDITS IN YOUR WEB BROWSER!

System Security Status: 3.13 of 10 (details...) | Up-to-date | Up-to-date

Computer Profile Summary

Computer Name: Laptopsp (in HOME)
Profile Date: 07 September 2006 18:58:29
Advisor Version: 7.2a
Windows Logon: Joe Cassels

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Operating System
Windows XP Professional Service Pack 2 (build 2600)

System Model
Sony Corporation PCG-FX501(GB) 01
Enclosure Type: Notebook

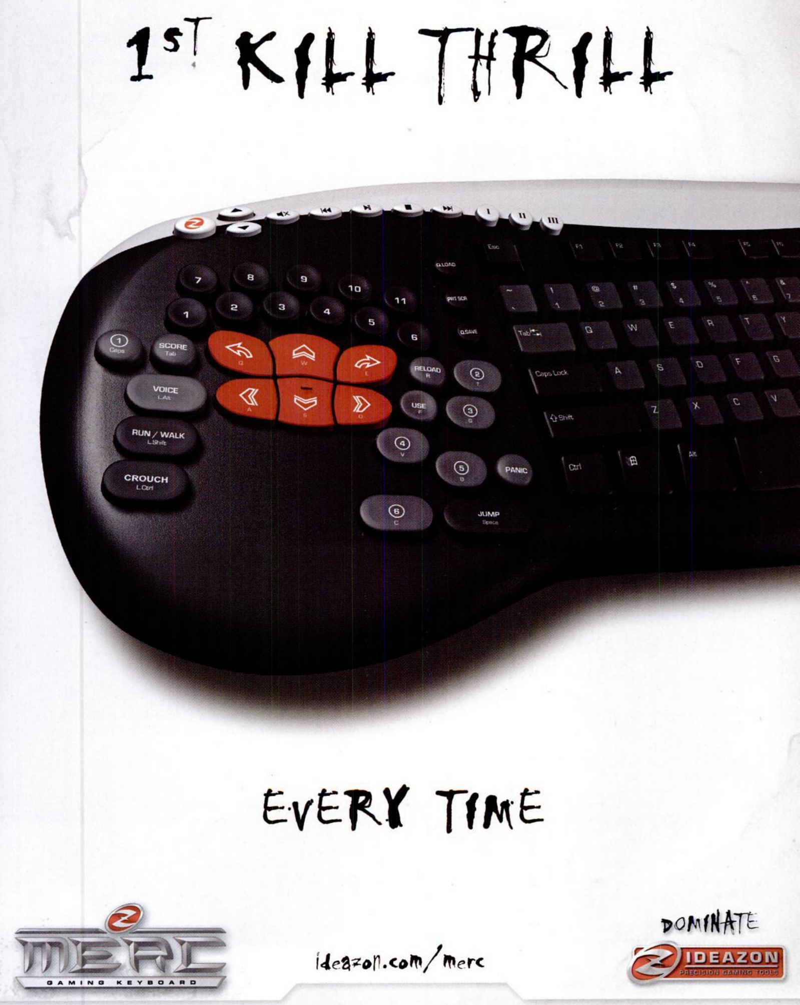
Processor
1000 megahertz AMD Duron
32 kilobyte primary memory cache
64 kilobyte secondary memory cache

Main Circuit Board
Board: Sony Corporation Q3-Project 1A
Bus Clock: 100 megahertz

Drives
80.02 Gigabytes Usable Hard Drive Capacity
34.05 Gigabytes Hard Drive Free Space

Memory Modules
512 Megabytes Installed Memory

3


1ST KILL THRILL
Q.LOAD
PRT SCR
Q.SAVE
SCORE
Tab
VOICE
L.Alt
RUN / WALK
L.Shift
CROUCH
L.Ctrl
RELOAD
R
USE
F
PANIC
JUMP
Space
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where each item is located using the location column. Some will be in the startup group on the Start menu; others may be in the Run key in the Registry. If so, choose Start > Run and enter regedit. Now browse to the entry and delete it.

Windows Health

A number of applications will help keep Windows running smoothly. Norton SystemWorks 2006 includes Norton Utilities, which features a handy program called Norton WinDoctor. WinDoctor carries out a series of tests to find and mend various Windows problems.

Select Norton Utilities > Find and Fix Problems > Norton WinDoctor to starts a wizard-like guide through the recommended tests. Opt to perform all tests and choose to select which tests to run, or examine the repair history and undo previous fixes. Click Next. WinDoctor now scans all areas of Windows for potential problems.

When the scan is over, click Finish. You'll see a summary of the problems that it found. To fix each one with the most appropriate solution, click Repair All. You can also examine the problems in more detail and use a manual fix.

If you're prepared to do a little work, EasyCleaner from ToniArts (**http://personal.inet.fi/business/toniarts/ecleane.htm**) can scan for unnecessary Registry entries, duplicate files, and invalid shortcuts. If you combine this with regular hard-drive error checking, you'll cover most of the bases that WinDoctor does.

Designated Drivers

Device drivers are like translators that convert Windows commands into messages that your devices can understand and vice versa. To make sure your computer is performing its best, you'll need to ensure that its drivers are up-to-date. A quick visit to Windows or Microsoft Update can turn up the latest drivers registered with Microsoft, but many hardware manufacturers don't make their drivers available to Microsoft.

You can find updates at the manufacturer's Web site or at a service like **www.driverguide.com**, but to be successful in your search, you'll need to be certain what components you have. A scan with Belarc Advisor pays dividends here — see the "Belarc Advisor Sees All" sidebar for details.

When you've located an updated driver and downloaded it, you'll need to update your existing one. Launch Device Manager and browse to the device you want to update. Right-click it and select Properties from the context menu. You now see the device properties dialog. Use this dialog to troubleshoot problems or check the resources it uses. Select the Driver tab to view the current driver details. Press the button marked Update Driver to launch the Hardware Update Wizard. You'll probably have the new driver saved on your hard drive, so select "Install from a list or specified location," check "Include this location," and browse to the driver file. Finally, click Next.

Who knows what germs are being carried by your mouse?

Don't Forget About Yourself!

A spic-and-span PC is worthless if you're not healthy enough to enjoy it!

Aside from concerns about computing being an inherently sedentary activity, could it actually make you ill? Prolonged computer use does pose some risks.

Computer use can cause health problems in three main areas. The first is eyestrain. There is little evidence that long-term use of monitors can damage vision, but poor positioning and squinting at a poorly visible screen can cause associated problems. The second, better-known health problem is repetitive strain injury. This condition is easier to prevent than it is to treat, so the time to act is before it develops. Finally, shared computers excel at transmitting any disease that's passed on by contact.

Thankfully, most of these issues can be minimized or eliminated altogether, as long as you take a few simple precautions.

Best Position

Good hygiene, careful organization of your workstation, and a sensible approach to posture and taking breaks will prevent most of these problems. Many home PCs aren't set up on workstations and perch on items of furniture that weren't designed for the task. Some furniture that was supposedly built for them is also an ergonomic nightmare.

However, there are ways to alleviate the problem without necessarily ditching your furniture and starting again. By rearranging things and understanding the best position to sit in, you can improve the situation. Ideally, you should sit between 18 and 24 inches away from your monitor, directly in front of it. Try not to sit slightly to one side.

Your legs need to fit under your desk with your feet flat on the floor. If you have short legs, consider using a foot rest. Your knees ought to be at right angles, with your thighs parallel to the floor. Also, keep your elbows at right angles to make sure that your position doesn't strain your forearms. Try to sit upright, retaining your back's natural curves. It often helps to have some lower-back support. Some chairs have this built in, but you can also make a lumbar roll out of a rolled-up towel. Put it behind your lower back while sitting; change the size of the roll if it doesn't feel comfortable.

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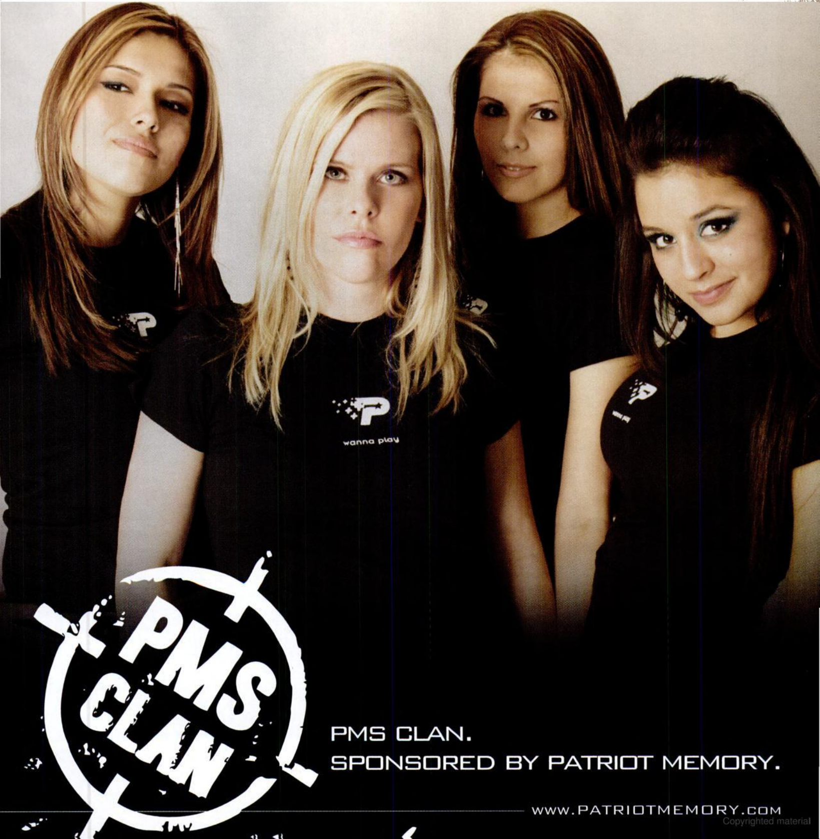
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Dirty Keyboard!

Don't laugh — keyboards are notorious for spreading infections

To thoroughly clean your keyboard, you'll need to remove the keys. Use a flathead screwdriver to carefully lever the keys upward. They're spring-loaded, so be ready to catch them. Don't force keys off, as you can break their retaining clips; carefully ease them upward. Wash each key with mild detergent. Take a photo or use a keyboard diagram to remind you of where each key was. Wipe thoroughly around each key's position.

When the keyboard base is clean, replace any rubber washers. These are often used underneath the keys to minimize the impact of typing on your fingers. When your keys are fully dry, you can reassemble the keyboard. With the washers back in place, carefully replace each key. They should just push into place, provided you didn't break any of the key clips when you removed them. Finish by wiping over the keyboard with a damp cloth and letting it dry.

For many people, levering off keys to clean them is a step too far. You can sanitize a keyboard by wiping it over with a clean cloth dampened with an antiseptic. This wouldn't pass clinical standards, but an occasional wipe and remembering to wash your hands before preparing food and after going to the toilet should be enough to make sure your keyboard doesn't make you ill. However, computers used in hospital administration will find their keyboards regularly swapped because it's impossible to soak them in bleach. To keep yours healthy, you might want to consider a thorough clean every year.

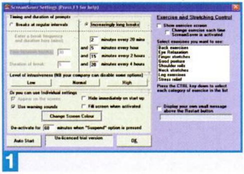
Your shoulders should be relaxed. Don't lean forward. If you need to do this to see the screen, you'll need to adjust your monitor's position accordingly. Your knees should be no further apart than the width of your shoulders. Sitting with legs splayed can put your lower back under tension. Keep your wrists relaxed — use your wrist rest if you have one and don't flex your wrists up or down.

A simple Google search will reveal vendors that offer specialized accessories to help lessen RSI and eyestrain and encourage good posture. Monitor arms enable you to adjust the height and angle of your screen to a greater degree than the stand that came with your monitor. Screen filters reduce glare and eye strain. Specially designed keyboards and vertical mice help lessen the strain on your hands and wrists. Monitor risers are an economical way to lift your screen to a comfortable position. Adjustable foot rests take care of your feet. If you manage to use some of these devices to improve the positioning of your monitor and keyboard, consider buying a decent chair — there are many good ergonomic chairs on the market. It's worth trying a chair before buying to ensure it'll help with your posture; visit a local office-furniture supplier to do so.

Take a Break

Having the right equipment and layout is only part of the solution. If

Scream Saver



ScreamSaver Settings (Press F1 for help)

Timing and duration of prompts

○ Breaks at regular intervals

● Increasingly long breaks

2 minutes every 20 mins
and 5 minutes every hour
and 15 minutes every 2 hours
and 20 minutes every 4 hours

Level of intrusiveness (NB your company can disable some options)

Low | Normal | High

Or you can use Individual settings

☑ Appear on the screen
☑ Use warning sounds
☐ Hide immediately on start up
☐ Fill screen when activated

Change Screen Colour

De-activate for 60 minutes when "Suspend" option is pressed

Exercise and Stretching Control

☐ Show exercise screen
☐ Change exercise each time ScreamSaver is activated

Select exercises you want to see:

- Back exercises
- Eye Relaxation
- Finger stretches
- Good posture
- Shoulder rolls
- Neck stretches
- Leg exercises
- Stress relief

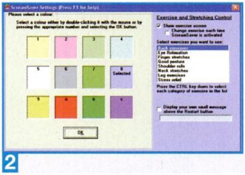
Press the CTRL key down to select each category of exercise in the list

☐ Display your own small message above the Restart button

Auto Start | Un-licenced trial version | OK

1

Scream Saver provides a short tour, which finishes at the configuration screen. Decide whether to take five-minute breaks every 30 minutes or breaks of increasing duration if you're at the PC for a long time. Why not give it a whirl — the trial version is on this issue's disc!



ScreamSaver Settings (Press F1 for help)

Please select a colour:

Select a colour either by double-clicking it with the mouse or by pressing the appropriate number and selecting the OK button.

Exercise and Stretching Control

☑ Show exercise screen
☐ Change exercise each time ScreamSaver is activated

Select exercises you want to see:

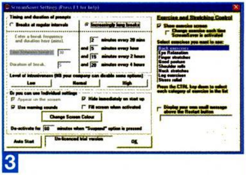
- Back exercises
- Eye Relaxation
- Finger stretches
- Good posture
- Shoulder rolls
- Neck stretches
- Leg exercises
- Stress relief

Press the CTRL key down to select each category of exercise in the list

☐ Display your own small message above the Restart button

2

You can change the level of intrusiveness. Select High if you know that you'll be unlikely to break unless nagged to do so. Click "Change Screen Color" and opt for a color that's easily visible, so you can't ignore it.



ScreamSaver Settings (Press F1 for help)

Timing and duration of prompts

○ Breaks at regular intervals

● Increasingly long breaks

Enter a break frequency and duration here (mins).

Duration of break. 5

2 minutes every 20 mins
and 5 minutes every hour
and 15 minutes every 2 hours
and 20 minutes every 4 hours

Level of intrusiveness (NB your company can disable some options)

Low | Normal | High

Or you can use Individual settings

☑ Appear on the screen
☑ Use warning sounds
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☐ Fill screen when activated

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- Shoulder rolls
- Neck stretches
- Leg exercises
- Stress relief

Press the CTRL key down to select each category of exercise in the list

☐ Display your own small message above the Restart button

Auto Start | Un-licenced trial version | OK

3

Finally, opt to show the exercise screen and select the kind of exercises that will benefit you most. The back exercises and neck stretches are probably most beneficial. Click OK to start Scream Saver's timer.

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you're not prepared to take regular breaks, you could still fall victim to RSI and other problems. The human body wasn't designed to stay sitting for long periods. That's why people on long-haul flights are susceptible to deep vein thrombosis: we're meant to move around. Take a break and some exercise as regularly as possible. If you don't think you'll remember, try using software reminders — e.g., pop a reminder into Outlook or your calendar program. If you'd like a more elegant solution, try using Scream Saver. It's a 30-day trial program, available from **www.infinn.com/screamsaver.html** (and it's on the disc), after which it costs $40 to register. See the "Scream Saver" boxout (previous page) for more details.

If Scream Saver feels too much like a babysitter, Posture Minder won't be for you, either. It's a program that uses a webcam to detect whether you're slouching, and it gently reminds you to avoid bad posture. It's almost like the technological equivalent of your mother saying, "Oh, for goodness' sake — sit up straight!" It's available from **www.postureminder.co.uk** and costs $80.

Disease-Ridden

Computer keyboards are breeding grounds for bacteria. We rarely wash our hands before and after using them, even when using a public access terminal in an Internet café or library. When you consider the cumulative effects of different people using a computer and the kinds of things they get up to, it's hardly surprising that keyboards and mice are a potential hygiene risk.

Just allow us to ram the message home: Think about the things you do while at your computer. Many people sip coffee or snack on bagels and fried food. You may well run your fingers through your hair, rub your eyes, or scratch at an uncomfortable itch. If the keyboard has picked up germs, it's easy to see how they can be transferred to you.

As you can see, diligence is essential in maintaining both your PC and your own health. If you follow all the advice we've laid out for you here, your PC and your body will be better off. MPC

The Dreaded RSI

Look out for tell-tale signs of repetitive strain to avoid a permanent health disability

RSI, or repetitive strain injury, is used to describe any condition that results from repeated actions or from prolonged periods of adopting unnatural posture. Sufferers often have to deal with a huge amount of pain and have reduced strength in their arms and shoulders. It can be debilitating, making mundane tasks like cleaning teeth and getting dressed difficult to achieve.

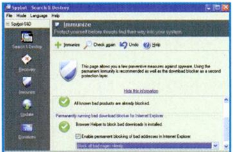
To successfully avoid RSI, it's important to diagnose it early. Be alert to early warning signs and seek medical help if you spot them. Recurring pain in the upper back, shoulders, arms, or hands is one indicator, as is numbness or loss of sensation. Regularly getting a numb arm when in bed can indicate onset of the condition. We all occasionally lie on our arms and restrict blood flow, but if this is happening regularly, it could indicate incipient RSI. Look out for loss of arm and grip strength. There's more than meets the eye to the firm-handshake test: muscles suffering from RSI can feel hard and stringy when massaged.

The best way to avoid repetitive strain injury while using a PC is to ensure that you sit correctly at your computer and take regular breaks. Maintaining good overall health is also beneficial. Exercise regularly and keep a balanced diet. Dehydration is thought to exacerbate onset, so make sure that you have plenty to drink and try to avoid the dehydrating effects of alcohol and caffeine wherever possible.

Further Help

For Microsoft's advice on keeping your PC healthy, go to **www.microsoft.com/windowsxp/using/setup/learnmore/tulloch_pc_health.mspx.** PC Pitstop **(www.pcpitstop.com)** offers an online diagnostic check of your computer.

Maintenance Program


Spybot Search & Destroy
File Mode Language Help
Spybot-S&D
Immunize
Protect yourself before threats find their way into your system.
Immunize
Check again
Undo
Help
Hide this information
Search & Destroy
Recovery
Immunize
Update
Donations

This page allows you a few preventive measures against spyware. Using the permanent immunity is recommended as well as the download blocker as a second protection layer.

All known bad products are already blocked.

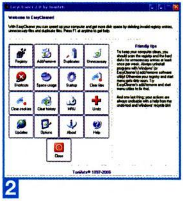
Permanently running bad download blocker for Internet Explorer

Browser Helper to block bad downloads is installed.

☑ Enable permanent blocking of bad addresses in Internet Explorer

1

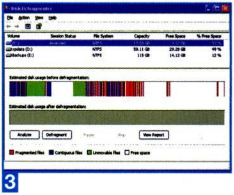
Scan your PC for viruses, Trojans, and spyware. To cover viruses, use AVG free antivirus software and its default settings for daily updates and scans. Spybot S&D will perform similar scans for spyware, but keep it updated yourself by using the Immunizing option.


Welcome to EasyCleaner!
Registry
Add/remove
Duplicates
Unnecessary
Shortcuts
Space usage
Startup
Clear files
Clear cookies
Clear history
MRU
Undo
Updates
Options
About
Help
Close
Friendly tips
ToniArts® 1997-2006

With EasyCleaner you can speed up your computer and get more disk space by deleting invalid registry entries, unnecessary files and duplicate files. Press F1 at anytime to get help.

2

Use Easy Cleaner to slim down the Registry and to remove unnecessary files and broken shortcuts. From the main window, select Registry > Find. When the unnecessary entries have been identified, click Delete All to remove them.


Disk Defragmenter
File Action View Help
Estimated disk usage before defragmentation:
Estimated disk usage after defragmentation:
Analyze
Defragment
Pause
Stop
View Report
Fragmented files
Contiguous files
Unmovable files
Free space

Volume	Session Status	File System	Capacity	Free Space	% Free Space
(C:)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
xpdata (D:)		NTFS	59.11 GB	29.28 GB	49 %
Backups (E:)		NTFS	115 GB	14.12 GB	12 %

3

Run error-checking and disk defragmenting regularly. Open My computer, right-click a hard drive, and choose Properties. Select the Tools tab and choose Check Now > Automatically fix errors > Start Now. You may need to reboot.

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Mark Kodesh - Creator & Owner, Global Night

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10 PC DISAS

Something's Wrong with the %@*! Computer!

You can't always prevent heart-stopping events from happening to your PC, but you can be better prepared to deal with them

There's no getting around the fact that computers sometimes go wrong. We're not referring to something as trivial as a missing shortcut, so much as an event that affects the PC as a whole.

How we deal with and prepare for system failure will dictate the extent of the damage when the worst does happen. The most obvious example is that of having a full backup of all your important data. If you have one of these that you can restore, you can take pretty much anything that your computer throws at you, as long as the backup is secure. The rest is the inconvenience of fixing broken equipment, isn't it? Well, not completely. With so much of our lives entrusted to the digital world, security of your data also raises its ugly head.

One of the worst computer disasters would be for someone untrustworthy to get hold of your personal data. This may not seem as dramatic as a PC bursting into flames, but its effects could be far more wide-ranging. This story will prepare you for severe computer problems from the physical to the intellectual. Most major dilemmas involve the loss of important data, but data theft is just as worrying and shouldn't be overlooked.

Replace faulty components

We'll start with the most frustrating disasters: those that might prevent you from using your PC due to hardware

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- **PC Inspector Smart Recovery**
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- **Ad-Aware SE Personal**

TERS FIXED!

BY THE MAXIMUM PC STAFF

failure. It's possible to resurrect a dead system by identifying and replacing the malfunctioning parts. We'll explain how to replace items such as the PSU, hard drive, and memory, and point out the pitfalls of each process. If your data isn't secure because you don't have a backup, we'll investigate the avenues open to you to recover what you can. We'll also examine how to diagnose and fix more irritating errors that can be as destructive as a major failure. Crashes and freezes can also mean loss of data, and they are best avoided or fixed.Data loss is a significant cause of stress – just ask anyone who's typed up a report, then forgot to save it before a power cut. We'll explain how to deal with corrupt files so you can rescue as much data as possible.

We'll also point out how to recover accidentally deleted items, including photographs on digital cameras, and how to deal with a scratched CD-ROM or DVD. If your computer won't boot and it contains data that you need to recover, you're in luck: we show you how to fix it using the Recovery Console, and how to create a recovery CD that'll enable you to browse an unbootable hard drive.

Security concerns

We have advice for you if your computer is hacked or if you know that someone else has been using your accounts. We'll also remind you of the best ways to keep your system clear of spyware, root kits, and key loggers, and we'll prepare you to use techniques to protect yourself online.

The growing popularity of wireless networks means that more people are trying to gain by piggy-backing onto them. Running an unencrypted connection isn't an option, but it's nearly as dangerous to use the wrong type of encryption: Some can be cracked in minutes, and if you use a router that's always on, your connection could be cracked and used without your knowledge. (If

"Oh No! Windows Has Frozen!"

Not to worry — we've got the anti-freeze

you're not using your network at any time, turn off access points and routers to ensure that no one else can use them.)

Finally, it's the accident waiting to happen. We all know someone who's spilled coffee on a keyboard. What would you do if it happened to you? Or worse, if your brand-new laptop suddenly got a dose of Colombia's finest export?

In a perfect world, computer disasters wouldn't happen. Because we don't live in a perfect world, it makes sense to anticipate problems and also to have some instructions to help you dig yourself out of any hole you might find yourself in. Hang on to this feature: it just might just save your — and your PC's — bacon.

Disaster #1: Power surge

A power surge can cause all sorts of havoc in a PC. It could take out a number of sensitive components, including the modem (if you still have one of those relics), motherboard, RAM or power supply. If the computer won't start at all, you'll need to try replacing the power supply. If this doesn't restore power, the motherboard may be at fault, although you'll probably need to test each of your components separately.

To swap in a new power supply, you'll need to open up your PC, so disconnect all cables and put it in a clear space where you can work. Unscrew the case and open it up, ensuring that you discharge any static difference between yourself and the case by touching it briefly. You'll now need to disconnect the old PSU. The main connector contains multi-colored wires and pushes into a wide socket in the motherboard. Most have plastic retaining clips that you'll need to pinch to pull free. A power supply is typically also connected to each of your disk drives, so you'll need to disconnect these as well.

Once you've removed all the connections to other parts of your PC, you can unscrew the power supply from your case and carefully lift it out. Take care not to open up any of the screws that hold the PSU itself together: It's dangerous to open a power supply, even if it's disconnected from the mains, because it can hold residual charge. You can now connect the replacement PSU, screwing it back into place on the case and restoring each of the connections to the motherboard and disk drives. Carefully plug in the power cable and turn on your system. If you're lucky, the computer will power up and you can reassemble it. However, if you don't get power, you'll need to do some further testing.

Take the motherboard out of the case and place it on a non-conductive surface. Remove everything except the processor, heat sink, and memory. Connect the power supply to the motherboard and hook up the power button and speaker. Press the on switch. Do the heat-sink fans turn? Can you hear any BIOS beeps? If the board seems to be receiving power, try connecting the graphics card.

5 **Quick** Tips

1. Help prevent hard-drive failure by setting a daily automatic defrag. Click Start > Run and enter the following: at 21:00 /every: M,T,W,Th,F "c:\windows\system32\defrag.exe" c: -f.

2. If you need to replace your power supply, it's a good idea to check over all your hardware using a diagnostic program once the new power supply is in place. The original PSU's failure could indicate a general power surge that could be affecting other components.

3. Remember that electrostatic discharge can be particularly damaging to memory modules. Take antistatic precautions when handling them. You can find out more about a particular virus or malware infection at Symantec's Security Response site **(www.symantec.com/security_response).**

4. When removing dust from components, remember that static charge can damage them. It's best to use compressed air rather than a featherduster.

5. Concerned about phishing? Find out about the most recent confirmed threats at the Anti-Phishing Working Group website: **www.antiphishing.org**.

How to Replace a Hard Drive

How you replace your hard drive depends on the kind of drive you have and whether you managed to catch the problem before the old drive became unusable. If the old drive still works, you can copy over the existing data. If not, you may have to restore from a backup or even reinstall Windows. If you're copying data, you'll need to first set the new drive as a slave, use a drive-cloning program to copy from your existing drive, and then reset the new drive as the master.

In a disaster situation, you'll probably completely lose the original drive. In this case, install it as the primary master drive and restore from a backup. Having bought your new drive, shut down your PC. Unplug all the cables and put the machine on a table with plenty of working space. Remove the retaining screws and remove the case cover. Ground yourself by touching a metal object. Take the new drive out of its wrapping and examine the diagram on it that shows the jumper position. Use tweezers to arrange the jumpers in the correct positions. (These vary from drive to drive.) And, of course, if your new drive has a SATA connection, you don't have to worry about jumpers at all (hooray!): you can just plug it into the same SATA port on your motherboard that the original drive was using.

Put the drive into a spare three-inch bay. Screw it into position so that it doesn't wobble about. Fit the power cable and the IDE or SATA cable, depending on the kind of drive you have. Reassemble your PC and start it up. You can now restore the data.

If you absolutely insist on using an IDE drive, make sure the jumper settings on your hard drive match its position in the BIOS boot hierarchy.

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Do this carefully, ensuring that you don't place stress on the slot. Connect your monitor and power up the PC. Do you get a picture? If not, replace the graphics card and try again. If this fails, the problem may be your graphics slot.

Now that you can get power and a picture, place the motherboard back in the case, lining it up correctly with the stand-offs to avoid shorting it out. Connect your hard drives and start the computer. Are they detected? Does it begin to boot correctly? If not, check your BIOS settings and jumper configurations, and try substituting the drives themselves.

Once you've restored power, make sure that you connect your computer to the wall socket via a surge protector or, better still, an uninterruptible power supply. These are much better at preventing surges than the minimal protection offered by a standard electrical outlet. A simple surge-protecting extension costs around $30 from good electrical shops, and a UPS will run around $80 and up, depending on your PC's power needs.

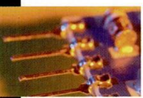
Disaster #2: Hard-drive failure

Hard drives have moving parts, and aside from fans, they're probably the hardest-working components in a computer. Eventually, all hard drives fail. It's better to anticipate failure than to have to deal with it unprepared, although it's easy to be wise after the event. Your best protection is afforded by regular backups using a drive-cloning program like Acronis True Image (**www.acronis.com**) or Norton Save & Restore (www.symantec.com), which cost $80 and $120, respectively.

Your backups should be supplemented with a program that uses SMART technology to monitor your drive's performance, such as Personal SmartCheck from URL Toy Software (**www.urltoy.com**). It costs $20, but you can use it for 30 days as a free trial. Personal SmartCheck provides continuous data on the health of your drives and an estimate of when each drive is likely to fail. This lets you plan when to replace the disk. SMART monitoring needs to be enabled in your BIOS, and you'll need to run a program that's capable of interpreting the data and displaying it in a form that you can understand. Most BIOSes enable SMART by default, but it's worth checking before installing any SMART software.

Knowing how to protect an existing drive is all very well, but what if you've just lost one? In the absence of an up-to-date backup, you could be in some trouble. If the drive won't spin up at all, you have no way to rescue the data. If the drive just about works but you can't get into Windows, you can either use the Recovery Console to fix or restore it (as shown in the "Coax a PC Back to Life" sidebar) or boot using a Bart PE disc (as shown in the "Rescue Data With Bart PE" sidebar). Otherwise, you may have to rely on a data-recovery service, which is quite expensive but worth it for valuable data. Or you can choose to accept that the data is lost.

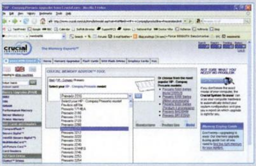
Physically changing the drive isn't difficult: see the boxout on page 30 for details. You may need to reinstall Windows after replacing a drive, but typically you can swap out a secondary drive with little trouble.



Disaster #3: Memory failure

After the hard drive, RAM failure is the most common hardware fault that can cause a PC to fail to boot or stop responding. Most memory failures occur when a DIMM is first used, but it can also fail due to electrostatic discharge, overheating or power surges.

Memory Problems — Solved!



Use Crucial's Memory Advisor tool to select the right kind of RAM for your system.

Repeated STOP errors, freezes, and other crashes may well be caused by faulty memory. If your PC has developed difficulties like these, your RAM could be to blame. Substituting it with some new RAM is the solution, but you can't always be sure that memory is the culprit. To make sure, you'll need to run some tests.

The most efficient memory test you can use runs outside Windows, so you need to boot from a CD to run it. It's called Memtest86, and you can get it right off this issue's disc. Select the CD ISO file version and use your CD-burning application to write this image to a bootable CD. (A floppy version is also on this issue's disc.) Boot from your Memtest disc, or your disk, and leave it to check out your RAM. The longer you run the test for, the more accurate it will be. If it turns up memory errors, you'll need to replace the faulty RAM units.

To identify the kind of RAM you need, browse to **www.crucial.com** and complete the Memory Advisor tool. This involves choosing your PC's manufacturer and model number. If your PC was custom-built, you'll need to search using your motherboard details instead.

With larger amounts of RAM being the norm, sometimes you may have a problem that appears only when higher memory addresses are used. This situation can be caused by a component that was already faulty but didn't show up because all the memory wasn't previously in use. That's why it's a good idea to test RAM thoroughly when you first install it. See the boxout below for more details.

Disaster #4: System freeze

When your computer hangs or you get a system freeze, you'll find that nothing responds. A hung application can be solved by pressing Ctrl + [Alt] + [Delete] to open up the Task Manager and selecting the application to terminate. A system freeze won't give you access to Task Manager and you may need to try a hard reset to get things back, losing the data currently in memory. This problem is often caused by overheated components or RAM failure. Test your memory (see "Memory Problems" sidebar) and also ensure that your system has adequate cooling and your fans aren't clogged with dust.

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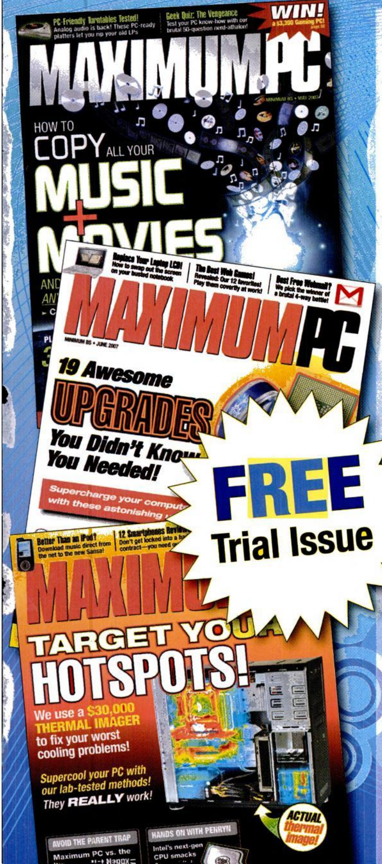
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Geek Quiz: The Vengeance
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MAXIMUM PC
HOW TO COPY ALL YOUR MUSIC + MOVIES
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@#*! What Happened to My Photos!

Data loss can either be inconvenient or a catastrophe, depending on what's been lost. Either way, you may be able to get it back!

Disaster #5: Corrupt files

You've been diligently saving your work as you go along, making sure that nothing gets lost. Yet, the next time you open your valuable Word file, all you can see is a series of rectangles. The data's been completely mangled and you don't have a backup copy to use. Data corruption is frustrating because it can happen without warning — and usually at the worst possible time. While the latest versions of Office include document-recovery routines, that doesn't make them immune to the problem.

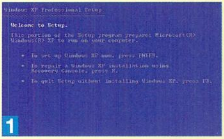
Corruption is usually caused by a problem with the media used to store the data. It could be bad sectors on a hard drive, damage to the foil layer on a CD, or a poor line on a dial-up connection. Whatever the cause, the result is a file that you can't open. If it's an important file, you could be facing a lot of stress.

A small amount of corruption can damage the entire file by introducing a frame shift, meaning that while some of the data is intact, your PC can't access it because it now appears in a different part of the file than where it's expected. Many corrupt files are recoverable, and in most cases you can get at least some, if not all, of the data back. Our walkthrough explains how to use software such as Ontrack Easy Recovery to restore files or Corruption Corrector to recover damaged downloads. It also points out one of the simplest and yet most powerful techniques for recovering the basic data from a corrupt file: opening it as a plain text document. Office documents include a number of formatting characters along with embedded objects such as pictures: these can't be rendered as intelligible text, but any text within the document may still be intact.

Having opened the file and located the text, you can copy and paste it into a new document. Now all you have to do is restore the formatting. This may still be quite a bit of work, but it's free and it saves you retyping or trying to totally regenerate the content.

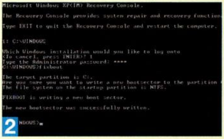
Having suffered a corrupt file, you'll need to make sure that the problem doesn't occur again. If the file was stored on your hard drive, you'll need to run a full disk check (including a surface scan), ensuring that bad sectors are marked so that they aren't used again. Right-click the drive in My Computer and choose Properties > Tools > Check Now. Choose "Automatically fix file-system errors" and "Scan for and attempt recovery of bad sectors." Click "Start now" and be prepared to restart your PC to complete the check.

How to Coax a PC Back to Life



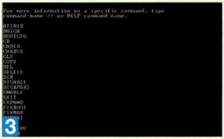
```
Windows XP Professional Setup

  Welcome to Setup.

  This portion of the Setup program prepares Microsoft(R)
  Windows(R) XP to run on your computer.

      •  To set up Windows XP now, press ENTER.

      •  To repair a Windows XP installation using
         Recovery Console, press R.

      •  To quit Setup without installing Windows XP, press F3.
```

1 **Boot from your Windows XP CD. At the Welcome screen, you're presented with several options, including installing Windows. Press [R] to enter the Recovery Console. You'll need to provide the administrator password that was set during installation.**



```
Microsoft Windows XP(TM) Recovery Console.

The Recovery Console provides system repair and recovery function

Type EXIT to quit the Recovery Console and restart the computer.

1: C:\WINDOWS

Which Windows installation would you like to log onto
(To cancel, press ENTER)? 1
Type the Administrator password: ****
C:\WINDOWS>fixboot

The target partition is C:.
Are you sure you want to write a new bootsector to the partition
The file system on the startup partition is NTFS.

FIXBOOT is writing a new boot sector.

The new bootsector was successfully written.

NDOWS>_
```

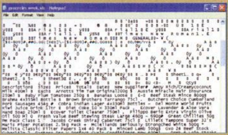
2 **You now see a command prompt. A limited number of DOS-type commands are available to you. If you have a damaged boot sector, you can restore it by typing Fixboot and pressing [Return]. Press [Y] to confirm.**



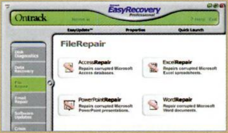
```
For more information on a specific command, type
command-name /? or HELP command-name.

ATTRIB
BATCH
BOOTCFG
CD
CHDIR
CHKDSK
CLS
COPY
DEL
DELETE
DIR
DISABLE
DISKPART
ENABLE
EXIT
EXPAND
FIXBOOT
FIXMBR
    T

    VC
```

3 **If Fixboot has worked, you should be able to get into Windows. If it didn't work, boot from CD and re-enter the Console. Type help and press [Return] to see a list of commands. Use these commands to try to recover data if you don't have a backup.**

How to Restore Corrupt Files



Right-click the affected file. Choose Open with > Choose program. Select Notepad. Make sure that the option to always use this program is left clear. Click OK. You may be able to see important data from the file, among formatting characters. Copy it and paste it into a new document.



FileRepair

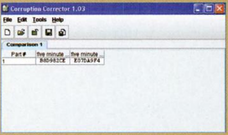
AccessRepair
Repairs corrupted Microsoft Access databases.

ExcelRepair
Repairs corrupted Microsoft Excel spreadsheets.

PowerPointRepair
Repairs corrupted Microsoft PowerPoint presentations.

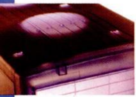
WordRepair
Repair corrupted Microsoft Word documents.

If you need to recover more than text characters, try Easy Recovery File Repair from Ontrack. (You can get a limited feature trial from www.ontrack.com.) Select the type of file you want to recover and then browse to it. Click Next, and the software will attempt to recover the file.



Part #	five minute ...	five minute ...
1	B8D982CE	E07DA9F4

If you've downloaded a file that's turned out to be corrupt, try downloading it again under a different filename. If the new version is no better, use Corruption Corrector, which will try to recover a complete file from two or more corrupt versions. (This program is free from http://ccorr.sourceforge.net.)



Disaster #6: Optical-Disc Issues

Despite early claims that data stored on optical discs was virtually indestructible, research has shown that you can't rely on a recordable CD or DVD for more than five years, and some fail before that time. Scratched discs often mean lost data, so you need to take care of them. It's also worth using the best discs that you can afford, as the reliability of those with high-quality foil and dye is significantly better than that of budget discs.

It's worth keeping valuable data on magnetic media as a backup drive. You can back up CDs to hard drives using a tool such as ISO Recorder, available from **http://isorecorder.alexfeinman.com/isorecorder.htm**. Install the program, put the CD you want to back up into the drive, and then right-click and choose "Create image from CD." Once the ISO image is created, you can use it in place of the CD if you install Daemon Tools, which you can get from **www.daemon-tools.cc**. This software enables you to create a virtual CD drive, which you can load with your ISO image.

If you have a scratched CD or DVD and you need to rescue the data, you can sometimes polish out the scratch using a fine metal polish like Brasso. If you plan to go down this route, try to copy as much data off the disc as possible before attempting to treat the scratch, in case you inadvertently lose more data. Use cotton wool and carefully polish the scratched area using circular motions. This treatment works if the scratch isn't too deep because metal polish is a very fine abrasive, so what you're effectively doing is sanding out the scratch. (It won't work if the foil is damaged, however.) If you do manage to remove the scratch, copy the data on the disc to more secure media immediately.

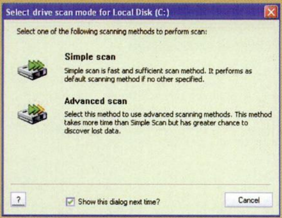
Rescue Data With Bart PE

Make a Bart PE disc before you run into trouble. Install PE Builder from the disc. Put your Windows XP CD into your CD drive, browse to My Computer, right-click this drive, and choose Explore. Copy the i386 folder to the root of your C: drive. You'll also need CD-burning software such as CDBurnerXP Pro (which is also on this issue's disc) and its associated plug-in for PE. (Download the plug-in from **http://cdburnerxp.se/forum/download.php?id=80**.) Double-click CDBurnerXP_Pro_PEBart_Plugin.exe and extract it to the PEBuilder3110a\plugin folder. Install CDBurnerXP Pro on your computer and browse to Program Files\CDBurnerXP Pro 3. Copy all of the files, plus the Resources and AVI folders, into the files folder inside PEBuilder3110a\plugin\cdburnerxppro3.

Launch PE Builder and set the source path to C:\. For the Media output, select "Burn to CD/DVD" and opt to auto-erase RW. Click "Plug-ins Select CD Burner XP Pro" from the list and enable it by clicking Enable/Disable followed by Close. To create your Bart PE recovery disc, click Build. This generates the CD image and then burns it to your disc. Test this disc by restarting your PC and booting from it.

You should now be able to use the pre-installation environment — an environment that's similar to Windows. You can browse your hard drive using the file manager. To recover files from your disk, launch CDBurnerXP Pro and copy them to CD or DVD.

How to Recover Lost Photos!



Select drive scan mode for Local Disk (C:)

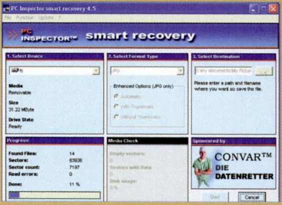
Select one of the following scanning methods to perform scan:

Simple scan
Simple scan is fast and sufficient scan method. It performs as default scanning method if no other specified.

Advanced scan
Select this method to use advanced scanning methods. This method takes more time than Simple Scan but has greater chance to discover lost data.

☑ Show this dialog next time?

Active@ UNDELETE 5.1 (www.active-undelete.com) costs $40. (There are free utilities you can try, too, such as Zero Assumption Recovery, http://www.z-a-recovery.com.) Launch it and double-click the local computer. Navigate to your digital-camera drive. Choose a simple scan, and then browse through the files. Select a deleted file and click Recover.



PC Inspector smart recovery 4.5

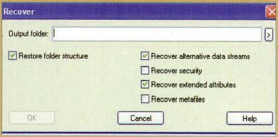
1. Select Device: h:
Media: Removable
Size: 31.22 MByte
Drive State: Ready

2. Select Format Type: JPG
Enhanced Options (JPG only)

3. Select Destination
Please enter a path and filename where you want so save the file.

Progress
Found Files: 14
Sectors: 63936
Sector count: 7197
Read errors: 0
Done: 11 %

Yet another alternative is PC Inspector Smart Recovery (on this issue's disc), which specializes in finding and recovering picture-format files. Supply the drive letter of your camera or flash drive and select the file format of the photos. Provide an output filename and location and then click Start.



Recover

Output folder:

☑ Restore folder structure
☑ Recover alternative data streams
☐ Recover security
☑ Recover extended attributes
☐ Recover metafiles

R-Undelete (www.r-undelete.com, $60, free trial available) is another good recovery utility. Install it and then double-click its entry in My Computer. Select your digital camera or flash drive. Any deleted files and folders are displayed with a red cross through their icons. Select one and choose R-Undelete > Recover to get it back.

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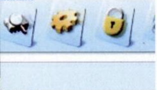
Disaster #7: Digital-Photo Recovery

Digital photography has revolutionized family snaps, but because they're so easy to copy and delete, it's also easy to lose a vital image. Thankfully, the media in your camera can be read by Windows as if it were a disk drive. As long as it's connected with the correct driver via USB or FireWire or you're using a suitable card reader, you should be able to browse the camera's images as if they were on a local drive. This means that you can also use an undelete utility to recover photos that have been lost, as long as they haven't been overwritten by newer images. The "Recover Lost Images" sidebar below explains how to restore pictures on your camera's media if they've been deleted. These techniques also work for other data on removable flash drives or local hard drives, for that matter.

@#*! My PC's Been Hacked!

The worst has happened: Someone else has gained access to your PC and personal files. And then you knock over your mug of coffee. All is not lost!



Disaster #8: Malware

It may not appear to be an immediate disaster, but should your data fall into the wrong hands, you might have more of a headache than your computer not working. Identity theft is the fastest-growing crime in the country, and one of the richest sources of useful data is your PC.

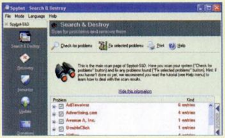
We talk about malware a lot, and that's because an insecure computer is a ticking timebomb waiting to turn your life upside-down. If your identity has been stolen, it can mean weeks of inconvenience, hard work, and financial hardship as you negotiate with banks and the authorities to rebuild your reputation and repair problems caused by someone else spending in your name.

If your identity's been swiped, you might notice entries on your credit-card bill that you don't recognize. You might be declined a loan or financial service based on your credit history, even if yours is good. If you think your details have been stolen, check out your credit history online — a number of alternatives are available via a quick Google search.

Clearly, prevention is far better than a cure. In addition to shredding sensitive documents before you dispose of them and jealously guarding your personal information, you should also ensure that your PC is free from spyware, Trojans, root kits, and viruses. Each of these could provide third-party access to your data. See the "Malware Begone!" sidebar below to find out how to keep your computer malware-free.

In addition to using the programs recommended there, also run Root kit Revealer (**www.sysinternals.com/Utilities/RootkitRevealer.html**). This program can help you detect the presence of a root kit and use a browser that includes phishing protection such as Internet Explorer 7 (**www.microsoft.com/windows/ie/default.mspx**) or Firefox 2 (**www.mozilla.com/en-US/firefox/**). If you want to stick with your existing browser for now, consider using an antiphishing toolbar like the CloudMark Anti Fraud toolbar. (Download it from **www.cloudmark.com**.)

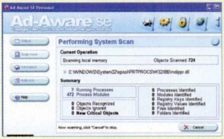
Malware Begone!



This is the main scan page of Spybot-S&D. Here you scan your system ("Check for problems" button) and fix any problems found ("Fix selected problems" button). Hint: if you haven't done so yet, we recommend you read the tutorial (see Help menu) to learn how to deal with the scan results.

Problem	Kind
☑ AdRevolver	6 entries
☑ Advertising.com	4 entries
☑ Avenue A, Inc.	1 entries
☑ DoubleClick	1 entries

Spybot Search & Destroy (www.spybot.info, and on this issue's disc) scans your system for current threats. Ensure that it's updated, run a full scan, and fix all identified problems. Opting to Immunize blocks known bad web pages and downloads.



Performing System Scan

Current Operation

Scanning local memory Objects Scanned: 724

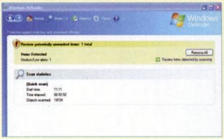
C:\WINDOWS\System32\spool\PRTPROCS\W32X86\mdippr.dll

Summary

7 Running Processes
472 Process Modules
0 Objects Recognized
0 Objects Ignored
0 New Critical Objects
0 Processes Identified
0 Modules Identified
0 Registry Keys Identified
0 Registry Values Identified
0 Files Identified
0 Folders Identified

Now scanning, click "Cancel" to stop.

Ad-Aware SE Personal Edition provides a similar scan without the immunizing option. It's worth running because it often picks up items that Spybot misses (and vice versa). Get it from www.lavasoft.nu, or from this issue's disc.



Review potentially unwanted items: 1 total

Items Detected
Medium/Low alerts: 1

Review items detected by scanning

Scan statistics

(Quick scan)
Start time: 11:11
Time elapsed: 00:02:52
Objects scanned: 19724

Windows Defender is Microsoft's antispyware application. Get it at www.microsoft.com/athome/security/spyware/software/default.mspx, or from this issue's disc. It's free to genuine Windows users and comes as part of Windows Vista.

Disaster #9: Open Network

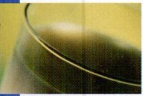
If you have a wireless network, make sure that no one else can use it. Your computers may have firewalls installed, but many firewalls permit access from the local network, so anyone connecting to your access point could browse shared resources. It's a good idea to password-protect shared folders as an additional line of defense and consider allowing access to shared resources based on the identification of the connecting computer.

Even with this setup in place, you could have unwanted visitors piggy-backing onto your wireless network. Where it's possible to connect to a router, you can usually also get Internet access. Some people may not mind providing free access to others in the vicinity, but bear in mind that any of their activity will show up under your account with your ISP. If your visitors decide to download movies or access illegal material, you may be held responsible. Someone else using your network has yet to be presented as a defense in court, but the responsibility for securing your network rests with you, so this excuse is unlikely to be viewed sympathetically.

To prevent others from gaining access via your router, you'll need to apply encryption. Older systems may offer only WEP encryption, which is very easy to crack. If this is the case for you, visit the website of the company that made your router or access point. Look for a firmware upgrade that enables WPA security. If

Fact! ***A key logger takes details of every key you've pressed since your machine was infected. This could include credit-card numbers and passwords.***

none is available, consider upgrading your equipment. Some systems enable you to specify the MAC addresses of equipment that's permitted to connect. If you have this facility, consider turning it on for a second line of defense. See the "Using WPA Security" sidebar for more details on how to use WPA security and using the GRC secure password generator to create your pass phrase.



Disaster #10: The Spilled Drink

If there's one disaster that's likely to make you fume, it's spilling liquid on your keyboard or laptop. It's frustrating because we've all been told at some point not to eat or drink at the computer, but most of us do. And given that liquids are damaging to computer components, it's easy for panic to set in. See the "Dreaded Laptop Spill" boxout to learn how to deal with a laptop drink disaster. Problems with keyboards and mice are less severe because they tend to be separate from the computer itself, but liquid can still damage them.

You can buy a keyboard very cheaply, but a cheap keyboard won't replace a wireless desktop set, so it's important to move quickly. Disconnect the wet keyboard. If it's a wireless one, remove its batteries. Turn the keyboard over to let it drain. If the mouse is affected, stand it on some paper towels to absorb the liquid. If the spilled drink wasn't sugary, the best course of action is to let your keyboard dry for as long as it takes.

If you spilled a sweet drink, you'll need to do a bit more work. Use a moist cotton ball or Q-tip to carefully clean around the keys. If you were quick to drain the keyboard after the initial spill, you should be able to remove most of the residue this way. But if the liquid got underneath the keys, you may need to carefully remove them. You can lever off the key caps using a flathead screwdriver, wash them, wipe underneath, and then dry and replace them. It's a good idea to take a photo of the keyboard before you dismantle it, to help you when you reassemble it later. You can take apart a ball mouse to dry it, but it's best not to do this with an optical one.

Using WPA Security

Prevent others from piggy-backing on your wireless network by enabling the highest level of encryption

Having a completely open wireless network just isn't an option nowadays. Wireless components are so common now that piggy-backing is commonplace — i.e., where someone in a nearby building uses your network, usually for its Internet connection, either because they have no connection or they want to shift the blame for downloading illegal content. WEP security provides basic protection, but it can be cracked by brute force in around 20 minutes.

It's not always easy to tell if your connection is being used, although you'll notice a drop in performance. Some routers enable you to view the MAC addresses of connected devices, but it's much better to try to prevent them from connecting in the first place. That's why we recommend using WPA encryption when it's available.

Browse to your wireless router's setup page and choose Security. The location of these WPA settings may vary from router to router. Choose TKIP if the option is available and opt for Preshared key (PSK) as the Authentication method. For pass phrase, select the pre-shared key type, and then enter your pass phrase. If possible, opt to allow connections only from WPA clients.

Save your settings and open network connections. Right-click your wireless connection and choose Properties. Move to the Wireless Networks tab. Select your network and choose Properties. For Network Authentication, choose WPAPSK and use TKIP for Data Encryption. Enter your pass phrase and click OK twice. You can now connect to your encrypted network in the usual way, supplying your pass phrase if necessary.

The Dreaded Laptop Spill

If you're unlucky enough to dump a drink on your laptop, you need to act fast: if the liquid penetrates to the unit's main components, you can kiss it goodbye. Spills are one of the biggest causes of laptop failure and they're rarely economic to fix once they've become deep-seated. If you spill on your laptop, immediately remove the power and forcibly shut down the unit — if necessary by pressing and holding down the power button. Without power, the damaging effect of the liquid is more limited.

Turn the laptop upside-down to drain away as much liquid as possible. Use absorbent cloth such as paper towels to soak up as much of the drink as possible. Try tilting the laptop in different directions to prevent pools of liquid from forming inside. Take out all connected peripherals, and remove the battery and any easily removed drives. Don't dismantle the laptop at this stage, though. You can use a hairdryer on a cool setting to dry out the components, or just leave them in a warm, dry place overnight.

After a day's drying time, tentatively try restoring power. Immediately remove the power if the laptop overheats or you smell anything burning. It's possible to replace a laptop keyboard, given the right replacement part, which you can find by visiting the manufacturer's website. If these steps don't fix the problem, replacing the computer or sending it in to be repaired is probably your best bet. MPC

BSOD CRASH COURSE

A Blue Screen of Death is like an encrypted message from your computer telling you there's a problem. We're going to help you make sense of the gobbledygook so you can fix whatever's ailing your PC!

BY PAUL LILLY

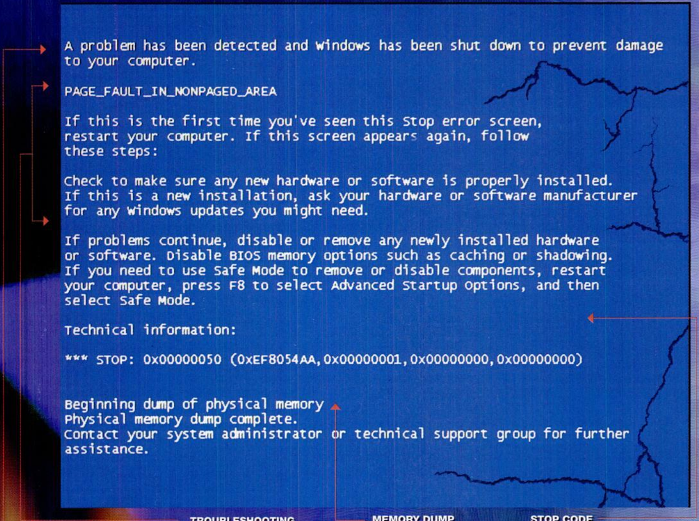
Picture this: It's late at night and you're sitting at your computer playing *Battlefield 2*, when suddenly, Windows freezes! Your game is gone, and you find a blue screen chock-full o' gibberish staring back at you. Windows is dead, Jim—at least until you reboot your rig. You have no choice but to sigh, shake your fist at Bill Gates, and angrily push the reset button. You've just been visited by the ghost of windows crashed: The blue screen of death.

Also known as the BSoD, the blue screen appears when core Windows components encounter a serious error—usually a crash or a lockup. The blue screen is actually a Windows "stop" screen, and it's designed to do two things: tell you what caused the error and calm your nerves, which explains the use of the color blue (studies show blue reduces stress). Blue screens are notoriously difficult to decipher—there are only a few different types of blue screen, but the same error message can indicate several different types of problem. Luckily, all the information you need to figure out the cause of your woes is right there in front of you in blue and white—and that's where we come in.

Flip the page to learn how to decrypt the most common errors, so you can get to the root of the problems causing your blue screen blues.

BLUE SCREEN AUTOPSY

It's helpful if you get to know all the parts of a blue screen and what they mean. By default, WindowsXP is configured to automatically restart the system when it encounters a fatal error, making it difficult to decipher a blue screen's message. To put a halt to Windows' automatic reboots after errors, right-click My Computer, select Properties, and select the Advanced tab. Navigate to Startup and Recovery and click the Settings button. Under System Failure, uncheck the option labeled Automatically Restart.



```
A problem has been detected and Windows has been shut down to prevent damage
to your computer.

PAGE_FAULT_IN_NONPAGED_AREA

If this is the first time you've seen this Stop error screen,
restart your computer. If this screen appears again, follow
these steps:

Check to make sure any new hardware or software is properly installed.
If this is a new installation, ask your hardware or software manufacturer
for any Windows updates you might need.

If problems continue, disable or remove any newly installed hardware
or software. Disable BIOS memory options such as caching or shadowing.
If you need to use Safe Mode to remove or disable components, restart
your computer, press F8 to select Advanced Startup Options, and then
select Safe Mode.

Technical information:

*** STOP: 0x00000050 (0xEF8054AA,0x00000001,0x00000000,0x00000000)


Beginning dump of physical memory
Physical memory dump complete.
Contact your system administrator or technical support group for further
assistance.
```

ERROR NAME
There are many parts to a BSoD, but the most important element is right at the top. The name of the error is presented in all caps with an underscore between each word. In some cases this will be all that's needed to get to the root of the problem. Most of the time, however, more information is required.

TROUBLESHOOTING ADVICE
Nearly every BSoD includes a portion of text with some basic troubleshooting instructions, the first of which recommends restarting your computer. (Before you restart, copy the exact all-caps error name and hexadecimal values shown above and below this portion of generic text.) The next paragraph provides sound advice, alerting the user to ensure that all hardware is installed properly, or to undo any recent software or hardware upgrades.

MEMORY DUMP
Every BSoD is accompanied by a memory dump: When Windows crashes, it dumps whatever it's holding in system memory to a file, and saves the file on your hard drive for debugging purposes. If you contact Microsoft or a hardware vendor for technical assistance, they'll want to know the contents of this file.

STOP CODE
The "technical information" portion contains the actual Windows stop code, in the ever-so-user-friendly hexadecimal format. Despite its unintelligible appearance, this combination of numbers and letters is instrumental in determining the cause of the crash. Pay particular attention to the first set of numbers and letters. It precedes the four that are enclosed in parenthesis. If a specific driver is associated with the crash, it will be listed on the very next line.

IRQL_NOT_LESS_OR_EQUAL (0x0000000A)

This most common of errors typically indicates a driver problem

The most common cause of this blue screen is improperly installed drivers for a newly installed piece of hardware. For example, if you installed a webcam two weeks ago, and have been getting BSoDs ever since, start your investigation with the webcam. First, disconnect the hardware, and uninstall the drivers for it completely. If that fixes the blue screen, you can search for updated drivers or contact the manufacturer.

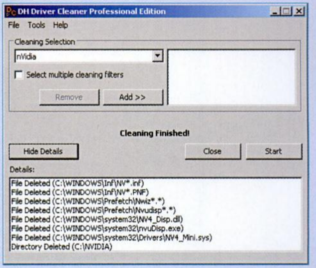
If you haven't installed any new drivers recently, you'll need to do some more detective work. Start by examining the blue screen to see if it lists a specific driver. (See the instructions on the previous page, to capture your blue screen's information.)

Looking at the blue screen, check the text at the very bottom of the screen. You'll probably see a file name. This is the driver that caused the problem. If, for example, the driver in question is named nv4_disp.dll (an nVidia-related file), and you've recently switched from an nVidia videocard to an ATI, then it's reasonable to assume that either the old driver was not uninstalled correctly, or the new drivers weren't properly installed.

SWAPPING VIDEOCARDS

If you've narrowed your search of offending drivers down to those associated with you videocard, turn off the system, disconnect the power, and remove and reseat the videocard. Next, go into the BIOS (press F2 or Delete when your BIOS prompts you to do this) and check the bus speed for your videocard (either AGP or PCI Express, depending on your rig's hardware). The AGP bus should be locked at 33.33MHz, and the PCI-E bus should be cruising along at 100MHz. If you've overclocked your system, it can inadvertently knock these bus speeds beyond a stable spec, which can cause blue screens.

Users are more likely to experience this IRQL error when switching from one videocard brand to another, as the drivers will conflict with each other. The safe way to swap videocards is to completely remove all remnants of your old videocard drivers using a free utility called *Driver Cleaner* (**www.drivercleaner.net**). To begin the process, click the Start menu and open the Control Panel. Double-click the Add or Remove Programs icon, highlight the videocard drivers, and click Remove. Reboot the computer, holding down the F8 key to enter safe mode. Run the *Driver Cleaner* utility to scrub away any remnants of the previous drivers that a typical uninstall overlooks. After you reboot, install the appropriate drivers for your new videocard.



Cleaning Selection: nVidia

☐ Select multiple cleaning filters

Cleaning Finished!

Details:

```
File Deleted (C:\WINDOWS\Inf\NV*.inf)
File Deleted (C:\WINDOWS\Inf\NV*.PNF)
File Deleted (C:\WINDOWS\Prefetch\Nwiz*.*)
File Deleted (C:\WINDOWS\Prefetch\Nvudisp*.*)
File Deleted (C:\WINDOWS\system32\NV4_Disp.dll)
File Deleted (C:\WINDOWS\system32\nvuDisp.exe)
File Deleted (C:\WINDOWS\system32\Drivers\NV4_Mini.sys)
Directory Deleted (C:\NVIDIA)
```

When you install a new videocard, use *Driver Cleaner* to completely wipe the driver remnants from your previous card off your system.

SOME SOUND ADVICE

When the error is related to an audio driver, take note of the program that was running when the BSoD occurred. Make sure the offending application's sound options are configured correctly—it's especially important that it uses the correct audio device–and download any patches available that address known issues. You should update your soundcard's drivers as well.

If you're using an add-in soundcard, verify that the motherboard's onboard audio is disabled in the BIOS, so the two audio drivers don't conflict with one another.

CHANGE DOCTORS

System services known to cause this error include virus scanners and backup utilities. We've had good luck with *AVG, Norton, Kaspersky*, and *Nod32* for our antivirus scanning, and *Norton Ghost* for backup duties. Do not run more than one antivirus application on your computer at a time!

DATA_BUS_ERROR (0X0000002E) *This is what happens when good chips go bad!*

This is one of the easier BSoDs to diagnose, as faulty memory sticks are almost always to blame. If you get this error, think for a second: Are those DIMMS you just added compatible with your motherboard? Your motherboard manufacturer's website will have a list of specific brands verified to work with your particular board. Next, are they installed in the correct slots? Some motherboards are more finicky than others when it comes to proper slot placement, and the situation is compounded when dealing with a dual-channel-capable board. Most motherboards that run dual-channel require that you install matching sets of RAM in the same-color slots, while others, such as MSI, require that you install them in alternate slots.

Once you've verified that your RAM is installed correctly and is compatible with your motherboard, then the problem is likely a bad stick. To find out which stick is bad you can simply remove one stick, then run your system for a while to see if the blue screens stop. Then swap the sticks and run your test again. If the machine blue screens with one stick, but not the other, you've found your culprit. You can also run a diagnostic program such as *Memtest86* (see sidebar next page) to help determine which stick is defective. Because most RAM sold today includes a lifetime warranty, be sure to check with your vendor before you toss out a bad stick.

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BLEEDIN EDGE GOLD BLADE AWARD

9/10

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NTFS_FILE_SYSTEM or FAT_FILE_SYSTEM (0x00000024 or 0x00000023)

File system errors are relatively easy to pinpoint, but time-consuming to repair

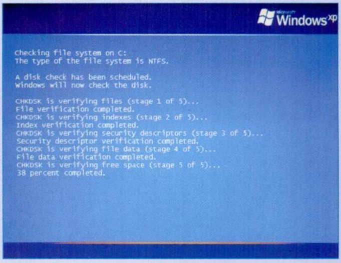
While many blue screens can be traced back to a new hardware install or bad memory, this particular error screams in capital letters that something is fishy with your hard drive. The error that gets displayed depends on the file system your OS is using. In most cases, the file system will be NTFS. With really old systems, the error will read FAT16. If you get this error, be sure to do one thing immediately, before you even begin to contemplate its cause: Back up your important data.

CALL THE CABLE GUY

The easiest solutions are often the most overlooked, but they can also be the most effective. Checking your hard drive's cable connections falls into this category. SATA cables are notorious for working themselves loose—we've had this happen to us on many occasions. Make sure the cable plugs securely into both the hard drive and the motherboard, and check the power cable connection as well. If using a SATA drive, make sure you have only *one* power cable connected, not two (many SATA hard drives include a SATA power cable and a legacy four-pin connector). With a PATA drive, remove the ribbon cable and look for any bent or broken pins. Carefully line up the cable and push it securely into place. You might also have a bad cable, so if you have a spare cable lying around—one you know to be good—swap it with the one in your PC.

CHECK PLEASE!

Now it's time to check your drive for errors. To do this, we'll first run a diagnostic scan. Click Start, then Run, and type `cmd`. This brings up a command prompt. At the flashing command prompt, type `chkdsk /f /r` and reboot the system if prompted. The /f and /r switches attempt to fix file-system errors, then look for and mark any bad sectors before automatically rebooting when the scan completes.



```
Checking file system on C:
The type of the file system is NTFS.

A disk check has been scheduled.
Windows will now check the disk.

CHKDSK is verifying files (stage 1 of 5)...
File verification completed.
CHKDSK is verifying indexes (stage 2 of 5)...
Index verification completed.
CHKDSK is verifying security descriptors (stage 3 of 5)...
Security descriptor verification completed.
CHKDSK is verifying file data (stage 4 of 5)...
File data verification completed.
CHKDSK is verifying free space (stage 5 of 5)...
38 percent completed.
```

A file-system error usually indicates a hard drive issue. Use Windows' chkdsk to find and fix any problems.

CHANGE DRIVERS

Even though we don't really think about hard drives as needing drivers, the controller's they're attached to most certainly do. A buggy SATA controller driver can wreak havoc on your data. Your motherboard's chipset drivers include specific drivers for the IDE/ATA controller that the hard drives are connected to, so you'll need to install the latest version for your motherboard. To find your chipset drivers, you'll need to go to your motherboard manufacturer's website and search the support section, or head directly to your chipset manufacturer's website.

MY RAM'S BEEN RANSACKED! *Diagnose a faulty stick of RAM with Memtest86*

Using a defective stick of RAM is one of the quickest ways to generate a BSoD. No memory vendor is immune from the occasional bad chip, but purchasing name-brand RAM is a surefire way to reduce this risk, and to guaranty an easy exchange if you encounter problems.

To run *Memtest86*, download the software from www.memtest86.com. Once installed, use it to make a bootable CD-ROM using *Nero* or another CD mastering program. Insert the newly burned CD-ROM into the PC and reboot your PC (you might need to go into the BIOS and change the boot order so that it boots off of the optical drive).

***Memtest* will run on its own when the system restarts. We recommend letting it run for at least two passes, and ideally overnight. The program will test whatever RAM is installed, so install one stick of RAM at a time for testing. If no errors are found, install the other stick into a different slot and run the test again. You can also move a "good" stick of RAM to different slots to ensure that the slots themselves are functional. Though uncommon, it's entirely possible for a DIMM slot on a motherboard to go bad and the symptoms are virtually identical to bad RAM.**

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UNEXPECTED_KERNEL_MODE_TRAP (0x0000007F)

Appropriately named, but we view all BSoDs as unexpected

If you see this blue screen, you're probably overclocking your CPU, but this is not always the case. The 7F error is known to attack indiscriminately, lashing out at more than just overclockers. This particular BSoD can rear its head in response to bad RAM, a faulty motherboard, or a corrupted BIOS.

OVERZEALOUS OVERCLOCKING

If you've overclocked, the first thing you should do to isolate the problem (or any problem, for that matter) is to revert your overclocked components to their default speeds. If the blue screen goes away, then your overclock was too aggressive. The best way to ensure that your overclock is stable is to stress the hell out of your PC. To do this, many enthusiasts turn to the torture test named *Prime95*, a free utility found at **www.mersenne.org**. This utility stresses your rig's CPU and memory subsystems. If any errors are found, it's a good indication that your system is not completely stable.

HOT POTATO!

This BSoD could also be generated by an overheating PC, so it's a good practice to monitor your system temps on a regular basis. Most of the machines in our Lab are outfitted with *Speedfan*, a utility capable of both monitoring and adjusting fan speeds based on system temperatures. It's available at **www.almico.com/speedfan.php** (see the How2 section in the July 2006 issue for more info).

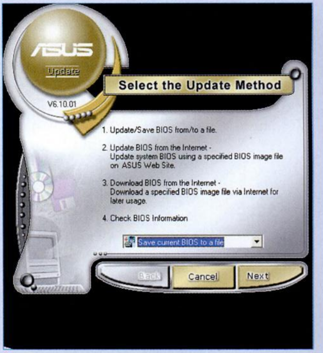
As far as temperatures go, most CPUs can get very hot without incurring any damage. Temperatures of 75 C aren't unheard of for hot-running CPUs. In general, it's a good idea to keep your CPU below 60 C at all times.

If a processor is running hot, examine your case's airflow and see if there are any obstructions. Check your fans for dust buildup, including the top of the heatsink that's cooling your CPU. A high-quality cooler will also bring temperatures down. And you should always have some sort of thermal paste between the CPU and the cooler. Finally, verify that all fans are spinning. If the fan is plugged in and still not spinning, replace the defective fan immediately.

THE BIOS BECKONS

If your BIOS is corrupt or has trouble with a new component, such as a newly released processor core, your first order of business is to update to the latest version. Before updating the BIOS, you should change its settings back to default (there is usually a "reset to default" setting in the BIOS that makes this process easy, or you can simply clear the CMOS via the jumper on your motherboard). You should never attempt to update your BIOS on a system that is overclocked and unstable. A sudden reboot in the middle of the BIOS-flashing process will destroy your motherboard, turning it into a fancy doorstop. And remember: Never, under any circumstances, restart or shut down the system while you're flashing your BIOS. You can download the latest BIOS from your motherboard manufacturer's website.

When there are several different versions to choose from, skip right to the latest release rather than updating incrementally. Some motherboard vendors include utilities for updating the BIOS from within Windows. This makes the process easy enough for even novices to undertake, but for obvious reasons, we recommend avoiding this route when a system is prone to blue screens.



Select the Update Method

1. Update/Save BIOS from/to a file.
2. Update BIOS from the Internet - Update system BIOS using a specified BIOS image file on ASUS Web Site.
3. Download BIOS from the Internet - Download a specified BIOS image file via Internet for later usage.
4. Check BIOS Information

Save current BIOS to a file

The Asus A8N32 motherboard includes a utility for flashing the BIOS within Windows. It's much easier than using a floppy drive, but you shouldn't use this utility if Windows is prone to blue screens.

MATING MEMORY

Mismatched or bad memory sticks can also cause this blue screen. To scratch this one off of the troubleshooting list, run a single stick of RAM that *Memtest86* has verified to be error free. If this solves the problem, replace the bad stick. If not, move on to the next step.

CPU IS KAPUT

We don't see this often, but another known cause for this particular error is a bad processor. Most people don't have the means to test the CPU in another system, so your options here may be limited. Local computer repair shops are sometimes willing to run the processor for a night or two for a nominal cost, but you can also contact AMD or Intel for a replacement if it's within the warranty period.

An End Run around the BSoD

If you don't want to bother with decrypting a blue screen, it's time you learned about the Event Viewer

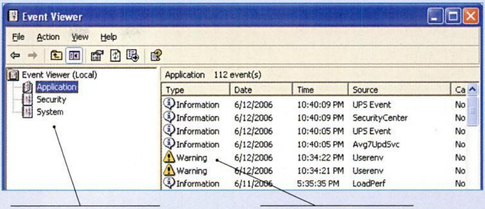
Reading blue screens of death is fun, but there's another, easier way to discover what your PC's problem is: the Event Viewer. When an error occurs in Windows, the OS adds a note to the system's log files. These logs are accessible through Windows' Event Viewer, and they contain all the information we need to know what ails our poor computer.

To get started, go to the Start menu and open the Control Panel. Click Administrative Tools, then double-click the Event Viewer icon. Alternately, select Run from the Start menu and type `eventvwr.msc`, which will bring you right into the Event Viewer.

On the left-hand pane, highlight the application or system icon. On the right-hand pane, you'll see up to three different events labeled Information, Warning, and Error. These are sorted by the time in which they occurred. Scroll to the approximate time of the last system restart and double-click the events. This brings up a Properties window detailing information that should clue you in on any problem. For example, if one of the events contains a bugcheck message with the code 0x0000002E, we know this is a DATA_BUS_ERROR, and is usually indicative of faulty RAM. On the other hand, there might be several events pointing to a specific driver, such as nv4_disp.dll. This tells us we should focus on the videocard and any recent changes related to the display hardware.

Armed with this information, we're ready to begin the troubleshooting steps outlined on the previous pages. If typing the event ID into Google (**www.google.com**) and Microsoft's Knowledge Base (**http://support.microsoft.com**) doesn't help, head over to **www.eventid.net**. This site contains a repository of comments and errors from other users, as well as the steps they took to alleviate their problems.

We recommend you familiarize yourself with the event viewer, even if your system is healthy. Rooting out minor problems before they progress will ensure your Windows install keeps humming along uneventfully. MPC

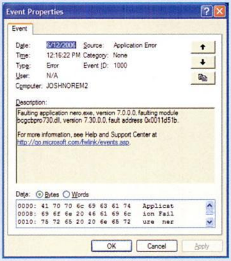


Application 112 event(s)

Type	Date	Time	Source	Ca
Information	6/12/2006	10:40:09 PM	UPS Event	No
Information	6/12/2006	10:40:09 PM	SecurityCenter	No
Information	6/12/2006	10:40:05 PM	UPS Event	No
Information	6/12/2006	10:40:05 PM	Avg7UpdSvc	No
Warning	6/12/2006	10:34:22 PM	Userenv	No
Warning	6/12/2006	10:34:21 PM	Userenv	No
Information	6/11/2006	5:35:35 PM	LoadPerf	No

The Event Viewer contains three logs: Application, Security, and System. An application log records events from specific programs. Everything about these logs is determined by the programmers for the given application and not by Windows. The security log records events that have to do with system security, such as logon attempts and proper or improper use of resources. Finally, the system log records items such as system drivers and other Windows-only system components.

In the right-hand pane are the actual events being recorded. Most of these are harmless and easily ignored, but for a system on the fritz, it would be silly to overlook any warnings or errors. If there are several errors, you can save them to a handy text file for easier viewing, by highlighting one of the three logs and selecting Export List from the Action drop-down menu.



Date: 6/12/2006 Source: Application Error
Time: 12:16:22 PM Category: None
Type: Error Event ID: 1000
User: N/A
Computer: JOSHNOREM2

Description:

Faulting application nero.exe, version 7.0.0.0, faulting module bcgcbpro730.dll, version 7.30.0.0, fault address 0x0011d51b.

For more information, see Help and Support Center at http://go.microsoft.com/fwlink/events.asp.

Data: ⦿ Bytes ○ Words

```
0000: 41 70 70 6c 69 63 61 74   Applicat
0008: 69 6f 6e 20 46 61 69 6c   ion Fail
0010: 75 72 65 20 20 6e 65 72   ure  ner
```

When an event is double-clicked, it brings up the Properties box displaying a summary of pertinent information. The top portion outlines the date and time the error occurred, the source of the error, and the event ID number. Underneath is a description of what happened and a link to Microsoft's help and support center. This is a great starting point for what will hopefully now be a short and painless troubleshooting journey. *Bon voyage!*

And the others...

Brief descriptions of the other BSoDs

PAGE_FAULT_IN_NONPAGED_AREA: Faulty hardware, including RAM (system, video, or L2 cache).

INACCESSIBLE_BOOT_DEVICE: Caused by improperly configured jumpers on PATA hard drives, a boot sector virus, or incorrect IDE controller drivers, which can also occur when installing the wrong chipset drivers.

VIDEO_DRIVER_INIT_FAILURE: Caused by installing the wrong drivers for a videocard, or rebooting before driver installation could complete.

BAD_POOL_CALLER: Caused by a faulty or incompatible hardware driver, particularly when upgrading Windows XP instead of performing a clean install.

PFN_LIST_CORRUPT: Caused by defective RAM.

MACHINE_CHECK_EXCEPTION: A bad CPU—or one that is too aggressively overclocked, or an underpowered or faulty power supply.

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Back Up Your Hard Drive

What invaluable data is on *your* hard drive? Wedding photos? Financial records? Your saved games from *Oblivion*? Here's how to preserve and recover those files in the wake of a disaster.

TIME 00:35 HOURS:MINUTES

Backing up the ol' hard drives belongs on that mental checklist we all maintain—the one titled "You Know You Should...." For most of us, data backup falls somewhere between "Floss Your Teeth" and "Call Your Mother." These are the things you know you need to do, but that you just keep putting off 'til *mañana*. You also know that it's inevitable that your procrastination will eventually bite you in the rump.

Before it gets to that point, download the free edition of 2BrightSparks' *SyncBack* software from **www.2brightsparks.com**, take 35 minutes, and follow this guide to backing up your hard drive. Floss your teeth while you're waiting for the backup to finish; and when it does, call your mother. She worries.

BY MICHAEL **BROWN**

1 Decide What to Back Up

There are two complementary approaches to backing up your hard drive: One is to create an "image" of the disk, and the other is to copy only selected files and folders. A disk image is a snapshot of an entire hard drive partition, less any empty sectors, and it includes the operating system, all your programs, and all your data. This can be useful, but it takes a lot of time and consumes an enormous amount of storage space. And if you're moving to a new PC, the image from your old one is likely to be useless because it will contain device drivers for hardware that might not exist on your new machine.

Disk images can be a life saver, though, if you experience a catastrophic failure and you don't want to go through the tedium of reinstalling and reconfiguring your operating system, application software, and all the device drivers your hardware requires onto a new hard drive. We recommend creating occa-

Hard drive failure is a matter of when, not if. Don't tempt fate: Back up your critical data.

1 Decide What to Back Up [continued]

sional disk images, using a program such as Symantec's *Norton Ghost*.

But it's even more important that you copy your data files—frequently—because you never know when disaster will strike. That's the approach we'll discuss here: using special software to make backups of all your documents, email, music, spreadsheets, videos, and so on; plus, any programs you've downloaded from the Internet.

Our backup method won't restore any apps you've already installed, so make sure you save your original discs, as well as any patches and updates that you downloaded. It's also important to store copies of all your licenses and serial numbers, should it ever be necessary to reinstall any of those programs. And don't forget to back up your backup software; you won't be able to restore without it!

2 Choose a Backup Destination

Once you've identified *what* you want to back up, you need to decide where you're going to back it up *to*. Avoid using media, such as CD-R discs, that will require you to span your backup (spread it across more than one piece of media). Spanned backups take much more time because they require your intervention—to swap discs—during both the backup and the restore processes. Instead, use media that can accommodate your entire backup without spanning. An external hard drive that can be stored off site—in a different building or in a safe deposit box—is an ideal choice; another alternative is to copy the files to another computer on the Internet using FTP.

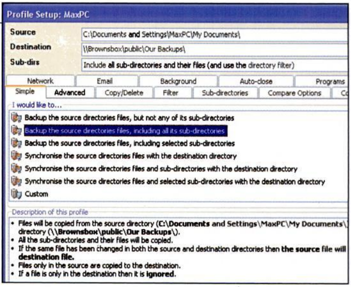
It pays to be paranoid: Creating more than one backup and storing each of them in different locations will provide added insurance in the event that both your original *and* your primary backups turn up missing, corrupted, or destroyed.

3 Create a Profile

The first time you run *SyncBack*, the software will ask if you wish to create a profile, which will appear in a toolbar the next time you run the software. Profiles give you one-click access to any customized backup and restore tasks you've created.

The freeware version of *SyncBack* offers two basic categories of profiles: Backup and Synchronization. A Backup profile does just what you'd think: It copies your files from one place to another. (Note: The freeware version of *SyncBack* does not perform *incremental* backups, a time-saving scenario in which only those files that have changed since the last backup are copied.) A Synchronization profile is useful if you regularly work on two PCs—a desktop and a notebook, for instance—and you want the data stored on each machine to mirror that which is stored on the other. For now, let's set up a Backup profile and assign it a name.

The next step is to choose source and destination directories. The source will contain the files you wish to copy, and the destination is where you want those copies stored. We recommend that you back up everything in your profile directory under C:/Documents and Settings, except the Local Settings folder. *SyncBack* defaults to backing up any and all sub-directories within the selected folder; click the Sub-dirs drop-down menu for other choices. If you'd rather back up to another computer on the Internet using FTP, click on the Expert Mode button and then the FTP tab. (Expert mode will reveal a host of other options, too).



Source C:\Documents and Settings\MaxPC\My Documents\

Destination \\Brownsbox\public\Our Backups\

Sub-dirs Include all sub-directories and their files (and use the directory filter)

I would like to...

- Backup the source directories files, but not any of its sub-directories
- Backup the source directories files, including all its sub-directories
- Backup the source directories files, including selected sub-directories
- Synchronise the source directories files with the destination directory
- Synchronise the source directories files and sub-directories with the destination directory
- Synchronise the source directories files and selected sub-directories with the destination directory
- Custom

Description of this profile

- Files will be copied from the source directory (**C:\Documents** and Settings\MaxPC\My Documents\
directory (**Brownsbox\public\Our Backups**\).
- All the sub-directories and their files will be copied.
- If the same file has been changed in both the source and destination directories then **the source** file will
destination file.
- Files only in the source are copied to the destination.
- If a file is only in the destination then it is **ignored**.

SyncBack's **profile tool greatly simplifies the process of backing up your hard drive.**

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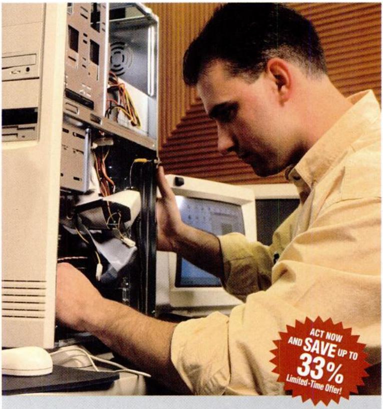
* Growth represents a ten-year period ending 2014. Source: *National Industry-Occupation Employment Matrix*, a publication of the U.S. Bureau of Labor Statistics.

**Salary information is based on the *Occupational Outlook Handbook, 2006-07 Edition*, a publication of the U.S. Department of Labor. Individual student earnings vary based on experience.



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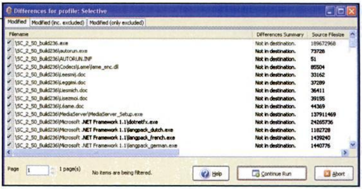
4 Run Your Backup

Click the OK button and *SyncBack* will ask if you'd like to perform a simulated run for this new profile. Click No to skip this step this time (you might want to explore this feature later). Select your newly created profile and click the Run button. *SyncBack* will now present a listing of all the files that are about to be backed up. Click the Continue Run button to start your backup. Hover your mouse over the profile name and a pop-up window will display your progress. When the program is finished, a success message will appear in the Result column. Congratulations! You've just backed up your hard drive!

For your next trick, consider using *SyncBack* to schedule automatic backups; that way, you won't have to think twice about backing up your crucial data. Just remember to store your backups someplace other than your main drive, so you won't lose both your original files and your copies should your drive die.



Differences for profile: Selective

Modified | Modified (inc. excluded) | Modified (only excluded)

Filename	Differences Summary	Source Filesize
✓ \SC_2_50_build236.exe	Not in destination.	189672968
✓ \SC_2_50_Build236\autorun.exe	Not in destination.	73728
✓ \SC_2_50_Build236\AUTORUN.INF	Not in destination.	51
✓ \SC_2_50_Build236\Codecs\Lame\lame_enc.dll	Not in destination.	85504
✓ \SC_2_50_Build236\Leesmij.doc	Not in destination.	33162
✓ \SC_2_50_Build236\Leggimi.doc	Not in destination.	37289
✓ \SC_2_50_Build236\Liesmich.doc	Not in destination.	36411
✓ \SC_2_50_Build236\Lisezmoi.doc	Not in destination.	39155
✓ \SC_2_50_Build236\Léame.doc	Not in destination.	44369
✓ \SC_2_50_Build236\MediaServer\MediaServer_Setup.exe	Not in destination.	137911469
✓ \SC_2_50_Build236\Microsoft .NET Framework 1.1\dotnetfx.exe	Not in destination.	24265736
✓ \SC_2_50_Build236\Microsoft .NET Framework 1.1\langpack_dutch.exe	Not in destination.	1182728
✓ \SC_2_50_Build236\Microsoft .NET Framework 1.1\langpack_french.exe	Not in destination.	1439240
✓ \SC_2_50_Build236\Microsoft .NET Framework 1.1\langpack_german.exe	Not in destination.	1440776

Page 1 1 page(s) No items are being filtered.

After selecting your backup profile and clicking Run, *SyncBack* will present a list of all the files that match the conditions defined in your profile. Click the Continue Run button and your backup will commence.

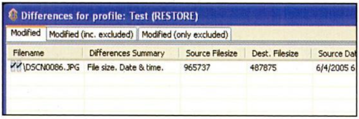
5 Recovering From Disaster

Let's say you fire up your PC one morning and the only noise you hear besides the fans whirring inside is an ominous clicking sound emanating from your hard drive. Your heart sinks into your stomach because you know your hard drive is toast. No worries, right? You backed up everything before you went to bed last night. You'll just fire up *SyncBack* and.... Oh, that's right, *SyncBack* requires Windows to run. Now what?

Assuming the rest of your PC isn't affected by whatever calamity has befallen your hard drive, you can replace the drive. If you've created an image of the old drive using a program like *Norton Ghost*, use that software to copy the image (and the working copy of Windows) onto the new drive, and then use *SyncBack* to restore the most current versions of your data files.

If you don't have a drive image, and you bought your PC preassembled, the manufacturer might have included a bootable recovery disc that can help restore even a new hard drive to your machine's initial configuration. If you built your own PC and you don't have a drive image, you'll need to reinstall Windows from scratch. In either case, you'll need to reinstall whatever other programs you've acquired in the interim—including, of course— *SyncBack*.

6 Restoring Your Files: Option One



Differences for profile: Test (RESTORE)

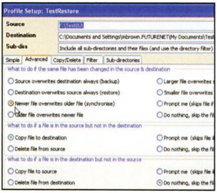
Modified | Modified (inc. excluded) | Modified (only excluded)

Filename	Differences Summary	Source Filesize	Dest. Filesize	Source Dat
✓✓\DSCN0086.JPG	File size. Date & time.	965737	487875	6/4/2005 6

***SyncBack* will inform you when the files you're attempting to restore have the same names but different attributes as files in your destination directory.**

After you've launched *SyncBack* there are two approaches to restoring your backed-up data. You could simply open the same profile you used to create your backup and click the Restore button, but this is risky and not always possible, especially if your hard drive was totally wiped out. A Restore operation swaps the source and destination directories: Your backup becomes your source, and the hard drive you're restoring to becomes the destination. If there are versions of any files on your hard drive that are newer than those in your backup, it's easy to overwrite those newer files by mistake.

7 Restoring Your Files: Option Two



Profile Setup: TestRestore

Source F:\TestBU\
Destination C:\Documents and Settings\mbrown.FUTURENET\My Documents\Test
Sub-dirs Include all sub-directories and their files (and use the directory filter)

Simple | Advanced | Copy/Delete | Filter | Sub-directories

What to do if the same file has been changed in the source & destination

○ Source overwrites destination always (backup) ○ Larger file overwrites s
○ Destination overwrites source always (restore) ○ Smaller file overwrites
● Newer file overwrites older file (synchronise) ○ Prompt me (skips file if
○ Older file overwrites newer file ○ Do nothing, skip the fi

What to do if a file is in the source but not in the destination

● Copy file to destination ○ Prompt me (skips file i
○ Delete file from source ○ Do nothing, skip the fi

What to do if a file is in the destination but not in the source

○ Copy file to source ○ Prompt me (skips file i
○ Delete file from destination ● Do nothing, skip the fi

The freeware version of *SyncBack* doesn't have a robust restore feature, but you can tweak its Synchronize feature to overcome that limitation.

We recommend creating a new profile to use when restoring files, to ensure that only the latest versions of files are copied to your destination folder. Click the New button, choose Backup, and click OK. Give the new profile a name and click OK. This time, your Source directory will be the folder containing your backup, and your Destination directory will be the folder you're restoring to. Choose the same primary option as your backup file, but click the Advanced tab. Under the heading "What to do if the same file has been changed in the source and destination," click the button labeled "New file overwrites older file," and click OK. Ignore the warning message and click OK. Click the Run button and your restore will execute. MPC

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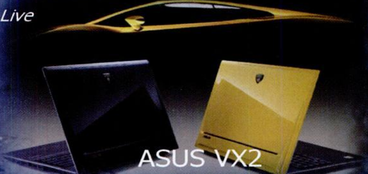

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FIX your PC!

BY PAUL LILLY

25 MUST-HAVE UTILITIES THAT WILL KEEP YOUR PC PURRING!

Remember when Windows XP first came out, and you were as giddy with the new functionality as a toddler opening a train set on Christmas morning? Remember when your Windows XP install felt zippy and fast? Well that was eons ago—now the caboose has lost its sheen and the engine is dragging ass. In order to get things running at full steam again, you need a set of kick-ass tools and utilities to revive the five-year-old XP install.

That's right, we're talking about teaching your old dog new tricks. A killer utility suite can breathe new life into an old OS—letting you do everything from tweak your fan's speed to browse your PC more efficiently, and more! There are so many utilities to choose from that it can be dizzying separating the useful from the ill-conceived, not to mention the utilities that are just payloads for malware.

Luckily for you, we've already done the research and compiled the best assortment of goodies we've ever offered, many of them free! Ranging from crucial security applications to nifty widgets we wouldn't want to be without, this is the software we install on every PC we build! Read on, and prepare your clicking finger to install these *25 must-have utilities!*

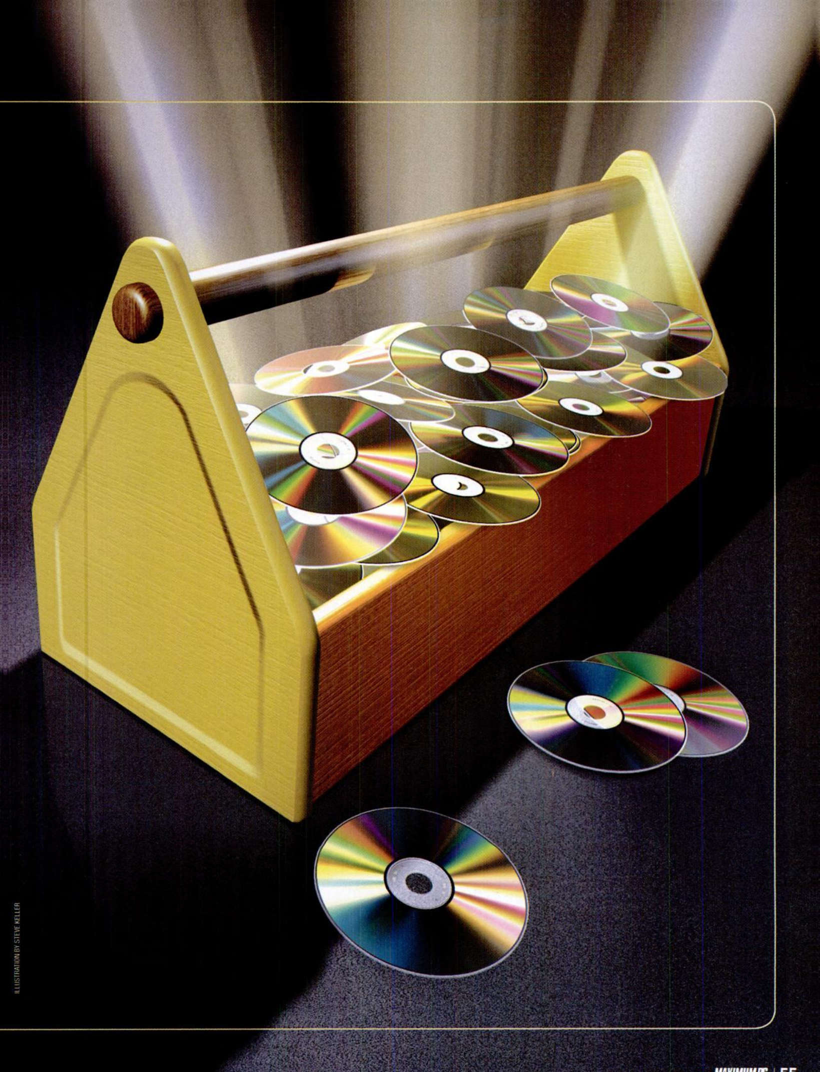


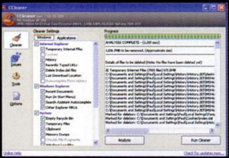
ILLUSTRATION BY STEVE KELLER

SYSTEM CLEANER

CCleaner

We admit it, we can be slobs, but even we didn't realize just how much hard drive space we waste. Clearing out temporary Internet files and other common cruft helps a little, but the *Disc Cleanup* app that comes with Windows barely dents the remnants left behind by your daily computing tasks.

Before shelling out for a new drive, try *CCleaner* (the first "C" stands for crap). In addition to clearing out Internet files, *CCleaner* nixes unused registry entries, old prefetch data, temporary files left by third-party applications, and an assortment of other clutter. It even scans for potential problems and offers to fix them.



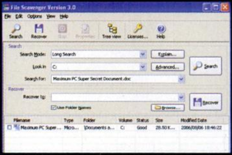
Using *CCleaner*, we recovered a whopping 1.5GB of underused space on a month-old installation of Windows!

FREE **www.ccleaner.com**

FILE RECOVERY

File Scavenger

Professional data-recovery services charge hundreds of dollars to recover the contents of a dead drive. Quetek's *File Scavenger* costs $50 and is worth every penny. We're amazed at how well this program works compared with other recovery software, and we were shocked when it salvaged data from a hard drive in such bad shape that it incorrectly identified itself as a FAT16 drive. Even reformatting and reinstalling Windows didn't faze *File Scavenger*, it dutifully restored our files without a hitch. Make sure you install *File Scavenger* on a partition or hard drive other than the one that holds your lost data, lest you overwrite your files!



Search

Search Mode: Long Search

Look in: C:

Search for: Maximum PC Super Secret Document.doc

Recover

Recover to:

☑ Use Folder Names

Filename	Type	Folder	Volume	Status	Size	Modified Date
☐ Maximum PC Super...	Micro...	\Documents a...	C:	Good	28.50 K...	2006/08/06 18:46:22

Oh, no! Did you empty the Recycle Bin when it contained an accidentally deleted file? Let *File Scavenger* track it down and restore it!

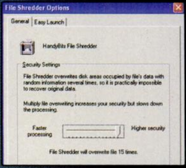
$50 **www.quetek.com**

DATA DESTRUCTION

File Shredder

You don't simply toss credit card statements and other private documents in the garbage, do you? A security-minded individual invests in a file shredder to protect his old documents from prying eyes.

You should give equal consideration to your PC data. A file thrown into the Recycle Bin is easily recovered, even *after* you empty the trash. HandyBit's *File Shredder* overwrites deleted files up to 15 times, rendering data recovery virtually impossible. And the interface couldn't be easier—drag and drop files into the app, select an entire folder, or right-click and highlight the "Destroy with Shredder" option. Best of all, there's no paper mess!



File Shredder overwrites disk areas occupied by file's data with random information several times, so it is practically impossible to recover original data.

Multiply file overwriting increases your security but slows down the processing.

File Shredder will overwrite file 15 times.

Want to get rid of an embarrassing file titled "To My Snookum Wookums"? Shred it with *File Shredder!*

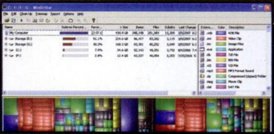
FREE **www.handybits.com/shredder**

DISK SPACE ANALYZER

WinDirStat

Is your 750GB drive already full? Wonder where the free space went? *WinDirStat* tells you exactly what's taking up the space on your hard drive and breaks it down by drive or by partition. The graphical display paints a colorful picture of your entire hard drive's directory structure, so you can quickly tell that your pr0n directory is the culprit.

More than simple eye candy, *WinDirStat* makes it easy to locate the files that are consuming the most space. When you want to know which folder or file is taking up a sizeable percentage of your drive, click its colored chunk and *WinDirStat* identifies the corresponding file and where it's located. Conversely, you can click a folder to see the corresponding space highlighted in the treemap. Now that's groovy!



***WinDirStat* takes the mystery out of the files and file types that are consuming the most hard drive space.**

FREE **windirstat.sourceforge.net**

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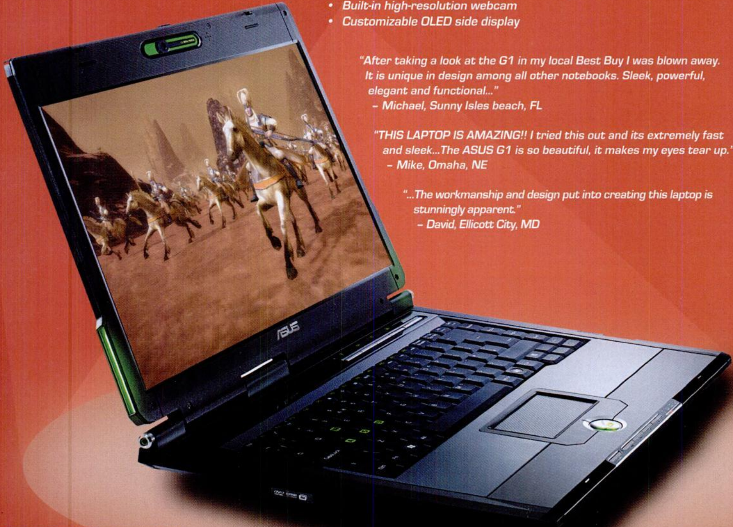

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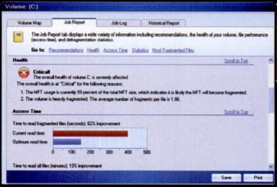
DISK DEFRAGGER

Diskeeper 10

Over time, the files on your hard disk become scattered across the platters, and can result in a performance hit. A fragmented drive is the PC equivalent of storing your cereal bowls in the attic and spoons in the basement. Defragging rearranges the drive's contents so that related files are near each other, putting the bowls in the cabinet and spoons in the drawer below.

Diskeeper defrags your hard drive quicker and more efficiently than Windows' built-in defragger, and it can even organize inaccessible files, such as the Windows pagefile and MFT. Once your drive is defragged, you can use the scheduling feature to ensure you never have to worry about a fragmented drive again.


Volume: (C:)
Volume Map
Job Report
Job Log
Historical Report
Go to: Recommendations Health Access Time Statistics Most Fragmented Files
Health
Scroll to Top
Access Time
Scroll to Top
Current read time:
Optimum read time:
0
100
200
300
400
500
Save
Print

The Job Report tab displays a wide variety of information including recommendations, the health of your volume, file performance (access time), and defragmentation statistics.

Critical!
The overall health of volume C: is severely affected
The overall health is at "Critical" for the following reasons:

1. The MFT usage is currently 99 percent of the total MFT size, which indicates it is likely the MFT will become fragmented.
2. The volume is heavily fragmented. The average number of fragments per file is 1.86.

Time to read fragmented files (seconds): 62% improvement

Time to read all files (minutes): 19% improvement

Defragging might not be sexy, but regular use of *Diskeeper* can result in significantly improved disk performance.

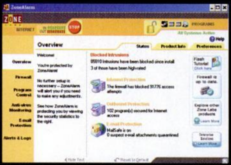
$30 **www.diskeeper.com**

FIREWALL

ZoneAlarm

Hackers have declared war on anyone with Internet access, so you should consider your computer constantly under attack. An unprotected PC will be infected with worms and other nasties within minutes of going online. Yes, we said *minutes*!

There are multiple software firewalls, but we turn to *ZoneAlarm* to stop hackers dead. *ZoneAlarm* monitors both incoming and outgoing traffic, alerting you to any threats. You can even view logs that show the geographical origin of your attackers. If you have a home network running, be sure to add each PC into *Zone Alarm's* trusted zones.


ZoneAlarm
ZONE
INTERNET
STOP
PROGRAMS
All Systems Active
Help
Overview
Status
Product Info
Preferences
Overview
Firewall
Program Control
Anti-virus Monitoring
E-mail Protection
Alerts & Logs
Flash Tutorial Click here
Firewall is up to date.
Explore other Zone Labs products
Learn More
Learn More
Hide Text
Reset to Default

Welcome!

You're protected by ZoneAlarm!

No further setup is necessary—ZoneAlarm will alert you if you need to make any adjustments.

See how ZoneAlarm is protecting you by viewing the security statistics to the right.

Blocked Intrusions
85810 intrusions have been blocked since install
3 of those have been high-rated

Inbound Protection
The firewall has blocked 91776 access attempts

Outbound Protection
102 program(s) secured for Internet access

E-mail Protection
MailSafe is on
0 suspect e-mail attachments quarantined

***Zone Alarm's* interface is easy for novices to configure and powerful enough for advanced users.**

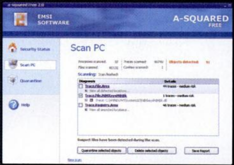
FREE **www.zonelabs.com**

ANTI-SPYWARE

A-Squared

Dialers and trojans and worms, oh my! It's a veritable jungle of malware on the Internet—even the most prudent surfer can fall victim to an infestation. Arm yourself with *A-Squared*, a spyware salve that soothes ailing PCs and cures an infection before it spreads.

A-Squared scans for all kinds of spyware, picking up variants that other scanners miss. If you happen to get infected by a brand-new breed of malware, there's a good chance it won't get past the heuristic scan. In case of false positives, especially with heuristic software, it's a good idea to quarantine unknown infections rather than deleting them outright.


EMSI SOFTWARE
A-SQUARED FREE
Security Status
Scan PC
Quarantine
Help
Scan PC
Diagnosis
Details
Quarantine selected objects
Delete selected objects
Save Report
New scan

Suspect files have been detected during the scan.

When safe surfing habits aren't enough, turn to *A-Squared* and rid yourself of spyware!

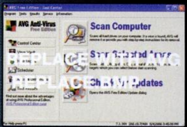
FREE **www.emsisoft.com/en/software/free/**

ANTIVIRUS

AVG Free Edition

Whoever said the best things in life aren't free obviously didn't have *AVG Free Edition* installed on their PC. *AVG* includes features worthy of a price tag, but the only thing it will cost you is the time it takes to download.

The basic scheduler does most of the work, keeping virus definitions up to date and scanning your system at an interval that you set. And should you accidentally click an infected file, *AVG's* Resident Shield will protect your PC; it will warn you before the malicious software has an opportunity to do any damage. Remember to create a rescue disk capable of cleaning your PC in DOS mode—you'll need it if you ever suffer a serious infection.


AVG Anti-Virus Free Edition
Control Center
Scheduler
Scan Computer
Check for Updates
REPLACE WITH AVG
REPLACE BMP

Can a free virus scanner really rival costly alternatives? *AVG* says yes, and we agree!

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a pre-assembled Liquid Cooled barebone specifically engineered for Ultra Quiet operations

Close up view of the Silverstone TJ07

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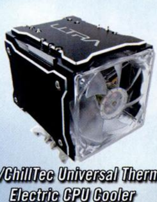
Danger Den 8800GTX Full Coverage GPU Water Block

Swiftech Apogee GT Universal CPU Water Block



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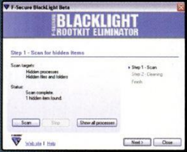
ROOTKIT SCANNER

Blacklight

As much as we'd like to recommend only one anti-malware program, there are just too many types of nasty software in the wild for any single program to catch them all. One particularly nasty type of malware is the rootkit, which hides malicious code deep within the OS. Rootkits are virtually undetectable to traditional scanners.

Picking up where other malware scanners leave off, F-Secure's *Blacklight* runs a fine-tooth comb through your system and exposes harmful rootkits. If found, *Blacklight* gives you the option to remove the offending code with the click of a button. Don't you wish everything in life were so easy?


F-Secure BlackLight Beta

BLACKLIGHT ROOTKIT ELIMINATOR

Step 1 - Scan for hidden items

Scan targets:
Hidden processes
Hidden files and folders

Status:
Scan complete.
1 hidden item found.

Most malware scanners also look for rootkits, but *Blacklight* specializes in tracking them down.

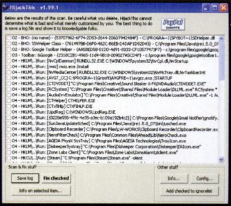
FREE www.f-secure.com/blacklight

ANTI-MALWARE

HijackThis

Despite the best efforts of spyware scanners such as *A-Squared* and *Blacklight*, some malware infiltrates Windows so deeply that the only solution is a full-blown reinstallation of Windows. Before waving the white flag, however, we turn to *HijackThis*.

HijackThis doesn't go after spyware, instead it targets the methods used by rogue programs to thwart removal efforts. A scan takes just seconds to complete, but it spits out a complete log of every single process running in your system. Before you delete, you should carefully analyze the logfile (or ask for help from the experts on your favorite web forum) so you only excise the harmful apps.


HijackThis - v1.99.1

Below are the results of the scan. Be careful what you delete, HijackThis cannot determine what is bad and what merely customized by you. The best thing to do is save a log file and show it to knowledgable folks.

```
O2 - BHO: (no name) - {53707962-6F74-2D53-2644-206D7942484F} - C:\PROGRA~1\SPYBOT~1\SDHelper.dll
O2 - BHO: SSVHelper Class - {761497BB-D6F0-462C-B6EB-D4DAF1D92D43} - C:\Program Files\Java\jre1.5.0_07
O2 - BHO: Google Toolbar Helper - {AA58ED58-01DD-4d91-8333-CF10577473F7} - c:\program files\google\gooc
O3 - Toolbar: &Google - {2318C2B1-4965-11d4-9B18-009027A5CD4F} - c:\program files\google\googletoolbar1.
O4 - HKLM\..\Run: [NvCplDaemon] RUNDLL32.EXE C:\WINDOWS\system32\NvCpl.dll,NvStartup
O4 - HKLM\..\Run: [nwiz] nwiz.exe /install
O4 - HKLM\..\Run: [NvMediaCenter] RUNDLL32.EXE C:\WINDOWS\system32\NvMcTray.dll,NvTaskbarInit
O4 - HKLM\..\Run: [AVG7_CC] C:\PROGRA~1\Grisoft\AVGFRE~1\avgcc.exe /STARTUP
O4 - HKLM\..\Run: [CTDVDDET] "C:\Program Files\Creative\Sound Blaster X-Fi\DVDAudio\CTDVDDET.EXE"
O4 - HKLM\..\Run: [RCSystem] "C:\Program Files\Creative\Shared Files\Module Loader\DLLML.exe" RCSystem *
O4 - HKLM\..\Run: [AudioDrvEmulator] "C:\Program Files\Creative\Shared Files\Module Loader\DLLML.exe" -1 Au
O4 - HKLM\..\Run: [CTHelper] CTHELPER.EXE
O4 - HKLM\..\Run: [CTxfiHlp] CTXFIHLP.EXE
O4 - HKLM\..\Run: [UpdReg] C:\WINDOWS\UpdReg.EXE
O4 - HKLM\..\Run: [{0228e555-4f9c-4e35-a3ec-b109a192b4c2}] C:\Program Files\Google\Gmail Notifier\gnotify.
O4 - HKLM\..\Run: [SunJavaUpdateSched] C:\Program Files\Java\jre1.5.0_07\bin\jusched.exe
O4 - HKLM\..\Run: [Clipboard Recorder] C:\Program Files\LW-WORKS\Clipboard Recorder\ClipboardRecorder.ex
O4 - HKLM\..\Run: [NeroFilterCheck] C:\Program Files\Common Files\Ahead\Lib\NeroCheck.exe
O4 - HKLM\..\Run: [AGEIA PhysX SysTray] C:\Program Files\AGEIA Technologies\TrayIcon.exe
O4 - HKLM\..\Run: [DiskeeperSystray] "C:\Program Files\Diskeeper Corporation\Diskeeper\DkIcon.exe"
O4 - HKLM\..\Run: [Zone Labs Client] "C:\Program Files\Zone Labs\ZoneAlarm\zlclient.exe"
O4 - HKCU\..\Run: [Steam] "C:\Program Files\Steam\Steam.exe" -silent
```

Does your system still seem infected after running anti-spyware and antivirus scans? *HijackThis* will expose any leftover remnants!

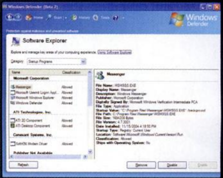
FREE www.merijn.org

STARTUP DIAGNOSTIC

Windows Defender

Microsoft's beta anti-spyware program evolved into what's now *Windows Defender.* Along with spyware scanning, the whiz kids at Microsoft added a wealth of other diagnostics with the Software Explorer function. *Defender* gives you a detailed list of the software that runs each time Windows loads, with the option to disable individual startup programs altogether.

In addition to the name of the application and the location of the executable, Software Explorer gives a description of the file, whether or not it shipped with the OS, the date and time of installation, and even the vendor's name.


Windows Defender (Beta 2)

Software Explorer

Explore and manage key areas of your computing experience.

Category: Startup Programs

Name	Classification
Microsoft Corporation	
Messenger	Allowed
Microsoft Userinit Logon Appl...	Allowed
Microsoft Windows Explorer	Allowed
Windows Defender	Allowed
ATI Technologies, Inc.	
ATI 2D Component	Allowed
ATI Desktop Component	Allowed
Conexant Systems, Inc.	
SoftK56 Modem Driver	Allowed
Publisher Not Available	

Messenger

File Name: MSMSGS.EXE
Display Name: Messenger
Description: Windows Messenger
Publisher: Microsoft Corporation
Digitally Signed By: Microsoft Windows Verification Intermediate PCA
File Type: Application
Startup Value: "C:\Program Files\Messenger\MSMSGS.EXE" /background
File Path: C:\Program Files\Messenger\MSMSGS.EXE
File Size: 1694208 Bytes
File Version: 4.7.3001
Date Installed: 11/15/2004 4:18:50 PM
Startup Type: Registry: Current User
Location: Software\Microsoft\Windows\CurrentVersion\Run
Classification: Allowed
Ships with Operating System: No

With *Windows Defender,* you can cut back on startup programs for a quicker boot time.

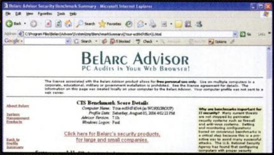
$50 www.microsoft.com

SYSTEM PROFILER

Belarc Advisor

We hate being audited, unless *Belarc Advisor* is assigned to the case. The program creates a comprehensive list of all the components, devices, and software you have installed. It even tells you which user accounts have logged onto your system, and it will generate a list of the Microsoft hotfixes your machine is missing.

After digesting the comprehensive report, click the CIS benchmark score to see how your system stacks up from a security standpoint. *Belarc Advisor* tells you where you're vulnerable and what you can do about it. All this in a measly 956KB package!


Belarc Advisor Security Benchmark Summary - Microsoft Internet Explorer

BELARC ADVISOR
PC Audits in Your Web Browser!

The license associated with the Belarc Advisor product allows for **free personal use only.** Use on multiple computers in a corporate, educational, military or government installation is prohibited. See the license agreement for details. The information on this page was created locally on your computer by the Belarc Advisor. Your computer profile was not sent to a web server.

CIS Benchmark Score Details

Computer Name: Your-ec89d7d5c4 (in WORKGROUP)
Profile Date: Saturday, August 05, 2006 4:02:23 PM
Advisor Version: 7.1h
Windows Logon: Paul

Click here for Belarc's security products, for large and small companies.

Why are benchmarks important for IT security? Many current threats are not stopped by perimeter security systems such as firewall and anti-virus systems. Setting and monitoring configurations based on consensus benchmarks is a critical step because this is a pro-active way to avoid many successful attacks. The U.S. National Security Agency has found that configuring computers with proper security

Think your PC is secure? Let *Belarc Advisor* give you a second opinion.

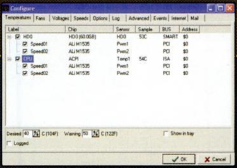
FREE www.belarc.com/free.download.html

FAN CONTROLLER

SpeedFan

Tasty dual-core processors, yummy SLI videocards, and delectable 10,000rpm hard drives have sated our appetite for raw power but leaves us thirsting for a quieter computing experience. *SpeedFan* quenches this thirst with an assortment of controls.

SpeedFan reports vital temperatures from your CPU cores and motherboard, and then automatically throttles the fans' speed based on the parameters you set. All that's required is a compatible motherboard (most models are) and fans you plug directly into the board. There are even custom preset profiles available for download that others have created for specific motherboards, taking the guesswork out of the configuration.



Configure

Temperatures | Fans | Voltages | Speeds | Options | Log | Advanced | Events | Internet | Mail

Label	Chip	Sensor	Sample	BUS	Address
☑ HD0	HD0 (60.0GB)	HD0	53C	SMART	$0
☑ Speed01	ALi M1535	Pwm1		PCI	$0
☑ Speed02	ALi M1535	Pwm2		PCI	$0
☑ CPU	ACPI	Temp1	54C	ISA	$0
☑ Speed01	ALi M1535	Pwm1		PCI	$0
☑ Speed02	ALi M1535	Pwm2		PCI	$0

Desired 40 C (104F) Warning 50 C (122F) ☐ Show in tray

☐ Logged

✓ OK ✗ Cancel

***SpeedFan* will keep your PC quiet by letting you adjust your fan speeds from inside Windows.**

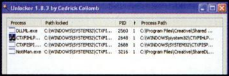
FREE **www.almico.com/speedfan.php**

FILE MONITOR

Unlocker

Renaming and deleting files are simple tasks, right? Usually, but when a file is locked by another application, Windows doesn't tell you what app or user has locked it. There's no way to tell what program holds the keys to your file, short of killing one program after the other until the file is freed up.

Unlocker solves this problem and puts you back in control. With a simple right-click, this nifty Windows Explorer exten-on tells you which app has its grubby aws on your file and then gives you the ion to rename, move, or delete the espite the lock. It will even stop the offending process altogether. Some files are locked for good reason and deleting them can render a program unusable. When in doubt, look it up on Google.



Unlocker 1.8.3 by Cedrick Collomb

Process	Path locked	PID	#	Process Path
DLLML.exe	C:\WINDOWS\SYSTEM32\CTXFI...	2560	1	C:\Program Files\Creative\Shared ...
CTXFIHLP...	C:\WINDOWS\SYSTEM32\CTXFI...	2648	1	C:\WINDOWS\system32\CTXFIHLP...
CTXFISPI....	C:\WINDOWS\SYSTEM32\CTXFI...	2688	1	C:\WINDOWS\SYSTEM32\CTXFISP...
NotiMan.exe	C:\WINDOWS\SYSTEM32\CTXFI...	3216	1	C:\Program Files\Creative\ShareDL...

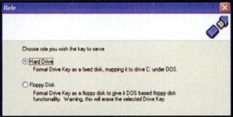
When we tell Windows to delete a file, the last thing we want to see is "No!" *Unlocker* gives us the final word, and that word is "Yes!"

FREE **http://ccollomb.free.fr/unlocker**

MANAGEMENT

Key Boot Utility

F one foot firmly in the
n we use ours for is
flo tall the occasional
SB keys, it
tur sket on the
64M
a sw quickly
devic w, the
BIOS with
and yo able
BIOS s
and cha est
the USB



Role

Choose role you wish the key to serve

● Hard Drive
Format Drive Key as a fixed disk, mapping it to drive C: under DOS.

○ Floppy Disk
Format Drive Key as a floppy disk to give it DOS based floppy disk functionality. Warning, this will erase the selected Drive Key.

Still using a floppy? Download HP's USB boot utility and finally rid yourself of that archaic contraption.

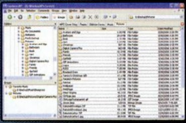
FREE **http://tinyurl.com/kaytz**

FILE MANAGEMENT

ExplorerXP

ExplorerXP does everything Windows Explorer does, plus a whole lot more. By including tabs, a la *Firefox*, *ExplorerXP* makes it easier to manage multiple browser windows and manipulate files.

For commonly accessed folders, *ExplorerXP* lets you create groups—for example, you can create a group called "Entertainment" to include your movie, music, and gaming folders, even if they're all on separate partitions. If you have multiple files to rename, just highlight them, label appropriately, and *ExplorerXP* will rename each one, adding a sequential number at the end (VacationPic001, VacationPic002, etc). Need to transfer a large file but don't have a large enough USB key or optical disc? No problem: *ExplorerXP* will break it up into manageable chunks.



Unlike Windows Explorer, *ExplorerXP* shows you the sizes of folders. We dig it!

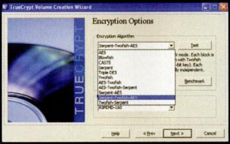
FREE **www.explorerxp.com**

FILE ENCRYPTION

TrueCrypt

We shudder to think what would happen if our top-secret plans for world domination fell into the wrong hands. *TrueCrypt* gives us peace of mind, and you can have it too!

You don't even need to install *TrueCrypt*, making this encryption program the ideal candidate for USB keys. Just copy the setup folder to your device and click the executable. *TrueCrypt* will create a virtual password-protected partition, and can even hide the partition, so your data will remain secure even if your password becomes compromised.


TrueCrypt Volume Creation Wizard
TRUECRYPT
Encryption Options
Encryption Algorithm
Test
Benchmark
Help
< Prev
Next >
Cancel

Encryption Algorithm: Serpent-Twofish-AES

AES
Blowfish
CAST5
Serpent
Triple DES
Twofish
AES-Twofish
AES-Twofish-Serpent
Serpent-AES
Serpent-Twofish-AES
Twofish-Serpent

RIPEMD-160

Paranoid that AES encryption is not enough? Try a three-layer cascading approach!

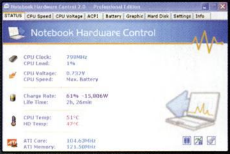
FREE **www.truecrypt.org**

NOTEBOOK POWER MANAGEMENT

Notebook Hardware Control

Few things are as frustrating as being caught without a power source when your notebook's battery runs dry—when it comes to surviving in the mobile world, battery conservation is the name of the game. Grab a copy of *NHC* and take control of your power management.

NHC allows you to dynamically switch your CPU's frequency, using an intuitive GUI. More than just a one-trick pony, *NHC* also serves as a system monitor, reporting on such system vitals as CPU and hard drive temperatures, and even how much free RAM is available. We particularly love being able to set processor voltages for different multipliers—that's perfect for overclockers!


Notebook Hardware Control 2.0 Professional Edition
STATUS
CPU Speed
CPU Voltage
ACPI
Battery
Graphic
Hard Disk
Settings
Info
Notebook Hardware Control

CPU Clock: 798MHz
CPU Load: 1%
CPU Voltage: 0.732V
CPU Speed: Max. Battery
Charge Rate: 61% -15,806W
Life Time: 2h, 26min
CPU Temp: 51°C
HD Temp: 47°C
ATI Core: 104.63MHz
ATI Memory: 121.50MHz

Let *NHC* manage your notebook's power consumption and never get stranded with a dead battery again!

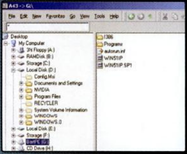
FREE **www.pbus-167.com/nhc/nhc.htm**

SYSTEM RECOVERY

BartPE

A borked hard drive doesn't necessarily mean all is lost, and *BartPE* has saved our hide on more than one occasion. Using a *BartPE* recovery disc lets us boot our PC even when the Windows install won't work. This allows us to recover data without first nuking and reformatting the drive, which would result in our files being lost forever.

BartPE is also compatible with a wealth of plugins that deliver additional functionality—*Firefox*, recovery software, *Nero* for CD-burning, antivirus programs, spyware scanners—you name it and there's a probably a plugin for it. No troubleshooting toolkit is complete without a *BartPE* disc.


A43 -> G:\
File
Edit
New
Favorites
Go
View
Tools
Help
Desktop
My Computer
3½ Floppy (A:)
RAMDisk (B:)
Storage (C:)
Local Disk (D:)
Config.Msi
Documents and Settings
NVIDIA
Program Files
RECYCLER
System Volume Information
WINDOWS
WINDOWS.0
Local Disk (E:)
Storage (F:)
BartPE (G:)
CD Drive (H:)
I386
Programs
autorun.inf
WIN51IP
WIN51IP.SP1

Anyone who fixes PCs on a frequent or even semi-frequent basis should carry around a *BartPE* CD.

FREE **www.nu2.nu/pebuild**

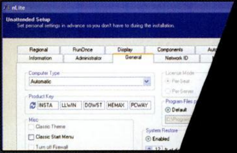
WINDOWS INSTALLER MANAGER

nLite

FREE **www.nliteos.com**

For installing Windows, there's the old-fashioned way and there's the *Maximum PC* way. Intrigued? Here's what you do: Copy the contents of your Windows CD to a folder on your hard drive, grab a copy of *nLite*, customize to your heart's content, and burn to a CD.

nLite's interface lays out all the options for you. Don't care for *Media Player?* Remove it! And *nLite* isn't just adept at removing items either—you can add service packs and hotfixes and skip the countless reboots associated with updating a new install. Heck, you can even integrate RAID drivers and avoid the hassle of F6 drivers entirely!


nLite
Unattended Setup
Set personal settings in advance so you don't have to during the installation.
Regional
RunOnce
Display
Components
Information
Administrator
General
Network ID
Computer Type
Product Key
Misc
License Mode
Per Seat
Per Server
Program Files
Default
System Restore
Enabled

Computer Type: Automatic
Product Key: INSTA LLWIN DOWST HEMAX PCWAY
☐ Classic Theme
☐ Classic Start Menu
Turn off Firewall

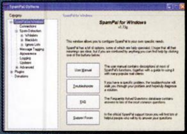
Don't care to sit in front of your installs? Use the Unattended S cally enter your CD key and n your absence!

SPAM FILTER

SpamPal

For fighting spam, there's *SpamPal* and then there's everything else. Using a combination of techniques—text analysis, Bayesian filtering, and old-fashioned blacklists—we've managed to banish spam from our inboxes, and you can too!

The latest betas of *SpamPal* don't even require you to configure your mail clients. The app just runs quietly in the background, and listens in on the traffic between your mail server and your mail client. When it decides that a message is spam, it puts a label in the subject line, which you can then use to filter offending messages into your junk email folder. You'll definitely want to install and configure the Regex and Bayesian plugins, for maximum spam-fighting power.


SpamPal Options
Category:
Connections
Spam Detection
Whitelists
Blacklists
Ignore Lists
Message Tagging
Appearance
Logging
Updates
Advanced
Plugins
Donations
SpamPal for Windows
v1.73g
User Manual
Troubleshooter
FAQ
Support Forum

This window allows you to configure SpamPal to your own specific needs.

***SpamPal* will clear your inbox of spam; and best of all, it's free!**

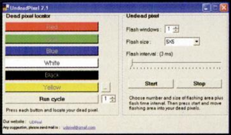
FREE **www.spampal.org**

LCD MAINTENANCE

UDPixel

Looking for dead pixels is about as fun as searching for Waldo, but it's a lot easier if you have the right tool. No, we're not talking about a magnifying glass; we're referring to *UDPixel*, a simple utility that quickly exposes both dead and stuck pixels on your LCD screen.

UDPixel works by displaying a series of colors over the entire display. If everything checks out when your screen's washed in red, move on to the next color. In the event you do find a stuck pixel, *UDPixel* attempts to fix it by targeting the affected area and rapidly flashing several colors.


UndeadPixel 2.1
Dead pixel locator
Red
Green
Blue
White
Black
Yellow
Run cycle
Undead pixel
Start
Stop

Flash windows : 1

Flash size : 5X5

Flash interval : (3 ms)

Press each button and locate your dead pixel.

Choose number and size of flashing area plus flash time interval. Then press start and move flashing area into your dead pixels.

Our website : UDPixel

Any suggestion, please send mail to : udpixel@gmail.com

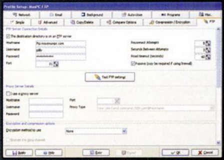
***UDPixel* exposes both dead and stuck pixels, making sure you don't get screwed when purchasing that new LCD monitor.**

FREE **http://udpix.free.fr**

BACKUP

SyncBackSE

What's that you say, you're not running a backup routine? Shame on you! *SyncBackSE* makes the process easy and convenient enough that you don't have any excuse not to back up. Just create a profile and follow the wizard's steps. And as its name implies, you can sync files or an entire hard drive from one system to a backup drive or even another machine, using a network connection or FTP. Test all these options with a simulated trial run before executing the real deal, and then set up an automated schedule for a seamless backup routine—we insist.


Profile Setup: MaxPC FTP
Network
Email
Background
Auto-close
Programs
Misc.
Simple
Advanced
Copy/Delete
Compare Options
Compression / Encryption
FTP
FTP Server Connection Details
Test FTP settings
Proxy Server Details
Encryption and compression options
Apply
Help
Easy
OK
Cancel

☑ The destination directory is on an FTP server

Hostname ftp.maximumpc.com

Port 21

Reconnect Attempts 5

Seconds Between Attempts 3

Read timeout (seconds) 60

☑ Passive (may be required if using firewall)

☐ I use a proxy server

Encryption method to use None

***SyncBackSE* lets you sync your files to an FTP site, and then retrieve or update them from your laptop, no matter where you are.**

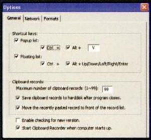
$25 **www.2brightsparks.com**

CLIPBOARD

Clipboard Recorder

It's the little things in life that keep us content—you know, tasks such as cutting, copying, and pasting. Such a simple concept, yet LW-Works has found a way to improve it.

Clipboard Recorder doesn't forget your clipboard's contents, at least not for the first 99 times you cut or copy. After that, the oldest records are overwritten one at a time, or you can manually delete what you don't need to keep. And get this, because *Recorder* saves its records to your hard drive, all your data remains after a reboot!


Options
General
Network
Formats

Shortcut keys:

☑ Popup list:

☑ Ctrl + ☑ Alt + V

☑ Floating list:

☑ Ctrl + ☑ Alt + Up/Down/Left/Right/Enter

Clipboard records:

Maximum number of clipboard records (1~99): 99

☑ Save clipboard records to harddisk after program closes.

☑ Move the recently pasted record to front of the record list.

☐ Enable checking for new version.

☑ Start Clipboard Recorder when computer starts up.

With room for up 99 entries, *Clipboard Recorder* ensures you'll never have to worry about accidentally copying over a crucial document!

FREE **www.lw-works.com**

FIX your PC!

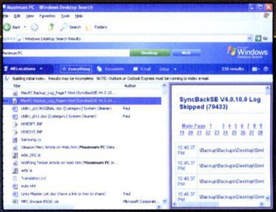
FILE INDEXING

Windows Desktop Search

Here's the scenario: Your boss just called and demanded a reprint of a report you wrote more than two months ago. No problem, you never delete anything; but finding it is another matter. Then it hits you: By the time the Windows search finishes, the deadline will have passed, and your promotion with it. Drat!

With *Windows Desktop Search,* you can still get that promotion! *WDS* indexes your entire hard drive, cataloging documents, music files, videos, pictures, and many other file types. It even pokes through your emails and contacts, delivering instantaneous results! The only thing it can't find is your keys.

FREE **http://desktop.msn.com**



Building initial index. Results may be incomplete. NOTE: Outlook or Outlook Express must be running to index e-mail.

SyncBackSE V4.0.10.0 Log Skipped (70433)

We thought our hopes for quick searches were dashed when WinFS was cut from Vista, but *WDS* restores our faith that it can be done!

Be Your Own PC Mechanic!

Keeping up with your PC's maintenance doesn't need to be a drag. Follow our 15-minutes-a-week program and your machine will run smoothly with minimal effort from you!

WEEKLY

DEFRAG

Fragmented files rob your system's performance. Run *Diskeeper* at least once a week to keep your HDD in optimal shape.

CLEAR THE CACHE

Temporary Internet files need not become permanent. Have *CCleaner* zap everything from the *IE* and *Firefox* caches.

VIRUS SCAN

The best defense is to practice safe computing habits, but you should follow that up with a weekly scan using *AVG.*

SPYWARE/MALWARE SCAN

A-Squared and *Blacklight* will keep your PC squeaky clean, but only if you update and run them often.

INCREMENTAL BACKUP

Be prepared for a dying hard drive or a dead OS by running frequent backups—just tell *SyncBackSE* when and where.

OUTLOOK/THUNDERBIRD BACKUP

Losing a week or more worth of emails is a hair-pulling experience. Export your messages frequently, or store them on the mail server.

MONTHLY

FULL BACKUP

You should always back up important data to another location. Use *SyncBackSE* to coordinate regular backups over a network or FTP connection.

REMOVE UNUSED SOFTWARE

Who needs clutter? Uninstall unused apps and old games, and then scrub your system with a full *CCleaner* run. Mom would be so proud!

CHECK SYSTEM DRIVERS

Updated drivers improve performance and enhance compatibility. Routinely look for driver updates on the vendors' websites for your videocard, soundcard, chipset, and other components.

CHECK LOAD TEMPERATURES

Heat is the bane of your PC. Use your motherboard's monitoring tool or *SpeedFan* to verify safe thermals.

CLEAN FANS/FILTER

Dust buildup inhibits airflow and can raise temperatures unnecessarily. Blast those dust bunnies clear with a shot of compressed air.

CHECK HARD DRIVES

Scan your disk (Go to the Start Menu, then click Run and type `cmd <enter>` and then `chkdsk <enter>`) every month to keep your file structure fit.

BI-ANNUALLY/ANNUALLY

CHECK COOLANT LEVEL

Air-cooling aficionados need not bother, but water-cooling setups should be checked and topped off at least every six months.

CHECK FILTERS

Most air filters will last the life of your PC, but they do sometimes degrade. Check, clean, and replace if necessary.

LOOK FOR DEAD PIXELS

Dead and stuck pixels are both annoying and distracting. Check every six months over the duration of your LCD's warranty period.

UPDATE SOFTWARE

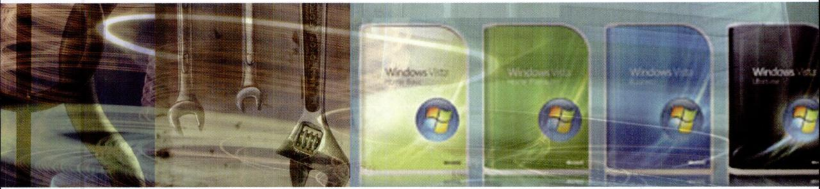
Only three things are certain—death, taxes, and software patches. There are a bunch, and many are significant. Keep your apps up to date.

UPDATE BIOS

Look for your motherboard's latest BIOS version. If there's a fix for a problem you've encountered, flash your BIOS.

CHECK WIRING

Cables wriggle loose and dangling wires interfere with fan blades. Whenever your case is open, give your wires a once-over and secure any loose fittings.



Fix Vista Annoyances

If you've upgraded from XP, your new OS will take some getting used to. We help you smooth the transition.

TIME 00:48 HOURS:MINUTES

After the buildup of excitement and anticipation, it's finally arrived. You installed Windows Vista. You're the envy of your friends—you're on the cutting edge of technology.

However, your initial enthusiasm may be fairly short-lived once you start using Vista. It might be the latest technology and the greatest thing since sliced bread, but seasoned PC users won't be impressed with every new feature. In fact, some of them are just plain annoying.

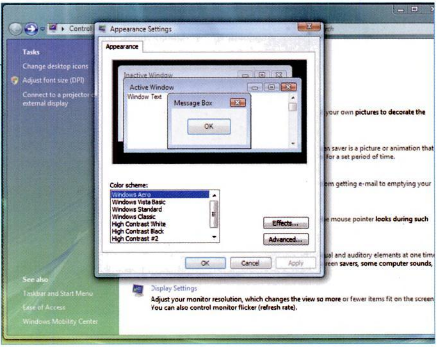
Windows Vista has some genuinely useful new features; however, Windows wouldn't be Windows without its idiosyncrasies. But there's no reason for you to put up with anything that's irritating or redundant. We'll show you what you're likely to come up against so that you're sufficiently equipped to deal with problems as they arise. In some cases, you'll be able to get rid of an annoying feature altogether; other times, you can change a setting to make a feature less irritating.

BY PAUL **TOWNSEND**

What to Do When Aero Stops Working

To make some applications within Vista work correctly, TV tuner software for example, you may have to downgrade your graphics settings. This will cause Aero to switch off while the application is running. The problem is that once you've finished using the software in question, Aero doesn't necessarily turn back on again automatically.

This highlights a particular annoyance within the OS. To change many of the basic settings in Windows Vista you have to drill down through numerous levels before reaching the item you need to tweak. To reactivate Aero Glass, right-click the desktop and choose


Control
Appearance Settings
Appearance
Tasks
Change desktop icons
Adjust font size (DPI)
Connect to a projector or external display
Inactive Window
Active Window
Window Text
Message Box
OK
Effects...
Advanced...
OK
Cancel
Apply
See also
Taskbar and Start Menu
Ease of Access
Windows Mobility Center
Display Settings

Color scheme:
Windows Aero
Windows Vista Basic
Windows Standard
Windows Classic
High Contrast White
High Contrast Black
High Contrast #2

Adjust your monitor resolution, which changes the view so more or fewer items fit on the screen. You can also control monitor flicker (refresh rate).

Aero Glass is Windows Vista's show stopper, so make sure it's activated.

What to Do When Aero Stops Working [continued]

Personalize. Click Window Color and Appearance and then select "Open classic appearance properties for more color options." Select Windows Aero under Color Scheme and then click OK and close the dialogs.

You'll experience a similar problem when attempting to change time and date settings. In XP you can simply double-click the clock and make the necessary changes. In Vista you have to work through numerous options.

Gentle Reminders

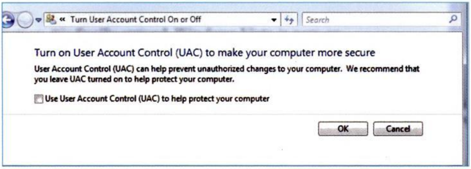
When you begin using Windows Vista, you'll notice that balloon tips pop up every now and again. To be fair, they can be informative when you are beginning to find your way around the OS. However, it doesn't take long to get fed up with the obvious being stated every time a task is carried out.

To disable these tips, click Start, type `gpedit.msc`, and press Return to launch the Group Policy Object Editor. Under Administrative Templates, click Start Menu and Taskbar and then select "Remove Balloon Tips on Start Menu Items." Click Properties and then under the Settings tab check the Disabled option. If you're using Windows Vista Home Premium edition, you won't have access to the Group Policy Object Editor. Instead, you'll need to use the registry editor to disable balloon tips. Click Start, type `regedit.exe`, and then press Return. Browse to HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced. In the right pane, click Edit > New > DWORD Value. Enter `EnableBalloonTips` in this field. Its default value of 0 will ensure that the tips are disabled.

QUICK TIP

In Windows XP it's simple to choose which column details appear in an Explorer window. In Vista right-click any existing column and choose More to add details.

Do You Want to Disable Annoying Popups? Confirm/Deny



« Turn User Account Control On or Off

Search

Turn on User Account Control (UAC) to make your computer more secure

User Account Control (UAC) can help prevent unauthorized changes to your computer. We recommend that you leave UAC turned on to help protect your computer.

☐ Use User Account Control (UAC) to help protect your computer

OK Cancel

User Account Control popups occur so frequently and are so annoying that users quickly get in the habit of always allowing applications to do whatever they want.

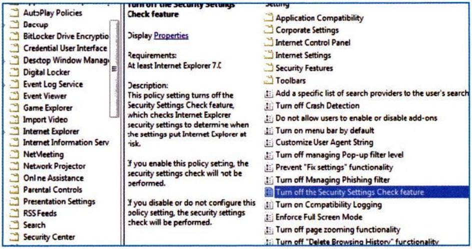
User Account Control is a new Windows feature that's designed to prevent unauthorized changes from being made to your OS. It's deemed so important that it's now monitored in the Security Center to see if it's functioning on your system correctly.

The drawback with this feature is its hugely frustrating inability to distinguish between good and bad actions. Unfortunately, it's unable to recognize the difference between you, the logged-in user, and a malicious attack from a third party. Therefore, whenever you want to make a change that could potentially affect your system, you'll be prompted with a security warning. You'll then have to decide whether you want to allow or block a particular task or action that's attempting to proceed.

The other major problem with User Account Control is that you may experience problems with older programs that are used to working with full administrator access. Although it has been implemented for your safety, UAC can become extremely annoying.

If you'd rather deactivate this feature, click Start and then go to the control panel. Type `UAC` into the search box and follow the prompts to disable User Account Control.

Edit Vista's Security Settings


AutoPlay Policies
Backup
BitLocker Drive Encryptio
Credential User Interface
Desktop Window Manag
Digital Locker
Event Log Service
Event Viewer
Game Explorer
Import Video
Internet Explorer
Internet Information Serv
NetMeeting
Network Projector
Online Assistance
Parental Controls
Presentation Settings
RSS Feeds
Search
Security Center
Setting
Application Compatibility
Corporate Settings
Internet Control Panel
Internet Settings
Security Features
Toolbars
Add a specific list of search providers to the user's search
Turn off Crash Detection
Do not allow users to enable or disable add-ons
Turn on menu bar by default
Customize User Agent String
Turn off managing Pop-up filter level
Prevent "Fix settings" functionality
Turn off Managing Phishing filter
Turn off the Security Settings Check feature
Turn on Compatibility Logging
Enforce Full Screen Mode
Turn off page zooming functionality
Turn off "Delete Browsing History" functionality

Turn off the Security Settings Check feature

Display Properties

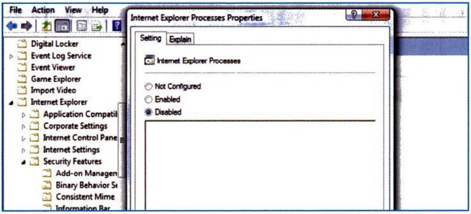
Requirements:
At least Internet Explorer 7.0

Description:
This policy setting turns off the Security Settings Check feature, which checks Internet Explorer security settings to determine when the settings put Internet Explorer at risk.

If you enable this policy setting, the security settings check will not be performed.

If you disable or do not configure this policy setting, the security settings check will be performed.

To prevent IE security prompts, click Start, type `gpedit.msc`**, and press Return. Under Computer Configuration, select Administrative Templates > Windows Components > Turn off the Security Settings Check Feature > Properties > Enabled.**

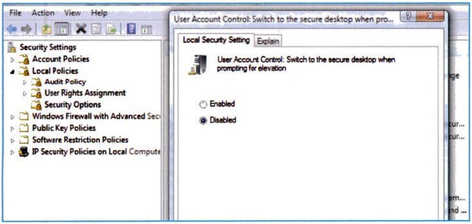

File
Action
View
Help
Digital Locker
Event Log Service
Event Viewer
Game Explorer
Import Video
Internet Explorer
Application Compatil
Corporate Settings
Internet Control Pane
Internet Settings
Security Features
Add-on Managen
Binary Behavior Se
Consistent Mime
Information Bar
Setting
Explain

Internet Explorer Processes Properties

Internet Explorer Processes

○ Not Configured
○ Enabled
● Disabled

To turn off the IE information bar, go to Computer Configuration > Administrative Templates > Windows Components > Internet Explorer > Security Features > Information Bar > Internet Explorer Processes. Click Properties > Disabled.


File
Action
View
Help
Security Settings
Account Policies
Local Policies
Audit Policy
User Rights Assignment
Security Options
Windows Firewall with Advanced Sec
Public Key Policies
Software Restriction Policies
IP Security Policies on Local Compute
Local Security Setting
Explain

User Account Control: Switch to the secure desktop when pro...

User Account Control: Switch to the secure desktop when prompting for elevation

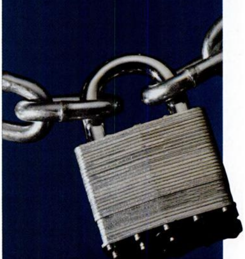
○ Enabled
● Disabled

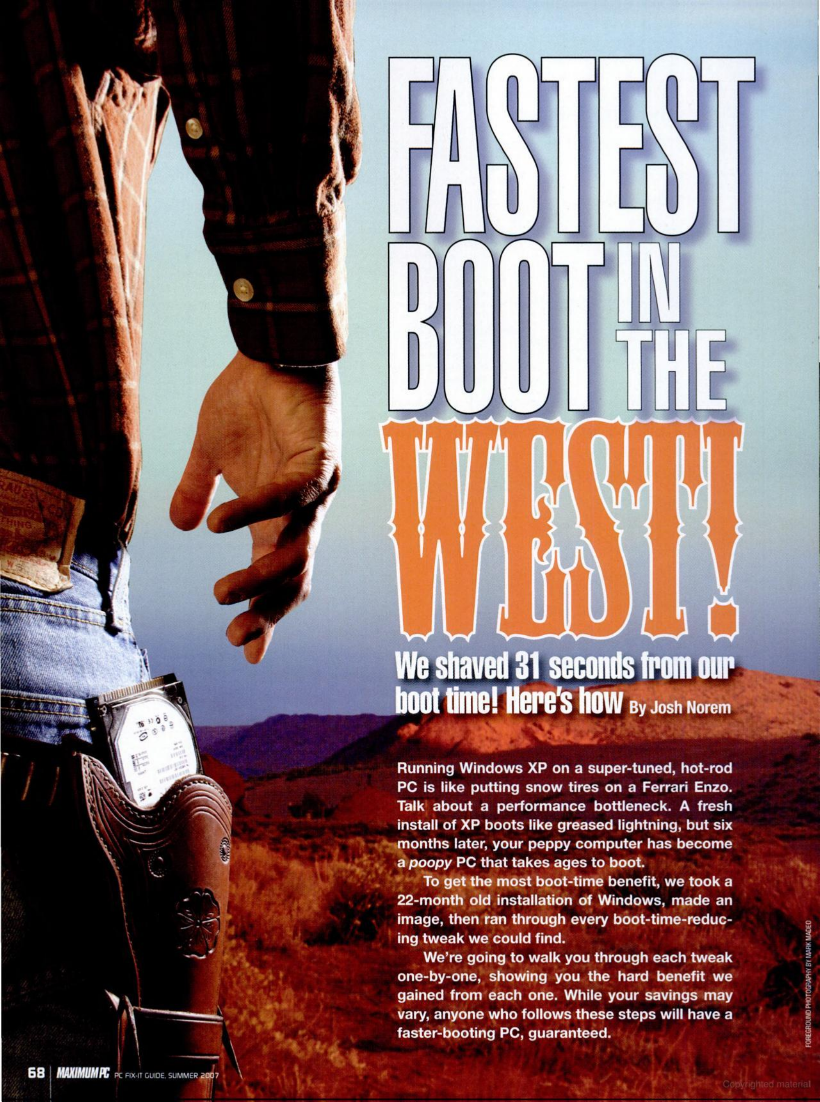
To prevent your display from turning gray, click Start, type `secpol.msc`**, and press Return. Go to Security Settings > Local Policies > Security Options > User Account Control. Switch to the secure desktop. Right-click it and then choose Properties > Disabled.**

LOCKED FOLDERS

After upgrading to Windows Vista from XP, you may find that you can't access some folders. You may be logged in with an administrator account, but the warning message "Access is denied" still appears. This can happen for a variety reasons. It's possible that someone else created the folder. Alternatively, some user account information may have changed even though your user account name and password have remained the same.

You can check the security settings for the item and, if necessary, take ownership of the folder. Right-click the item that's causing you problems and choose Properties. Select the Security tab and then click Advanced. Under the Permissions tab, go down to Permission Entries and check the information that's listed under Name. Look for Everyone and see if the permission type is set to Allow or Deny. If it's set to Deny, click Edit. In the Permission Entry dialog, clear any check boxes in the Deny column. Next, in the Advanced Security Setting for an item select the Owner tab. You can change the current owner to a specific user if you wish. Click Edit, select a new owner from the users listed, and then click OK. MPC





FASTEST BOOT IN THE WEST!

We shaved 31 seconds from our boot time! Here's how

By Josh Norem

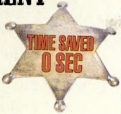
Running Windows XP on a super-tuned, hot-rod PC is like putting snow tires on a Ferrari Enzo. Talk about a performance bottleneck. A fresh install of XP boots like greased lightning, but six months later, your peppy computer has become a *poopy* PC that takes ages to boot.

To get the most boot-time benefit, we took a 22-month old installation of Windows, made an image, then ran through every boot-time-reducing tweak we could find.

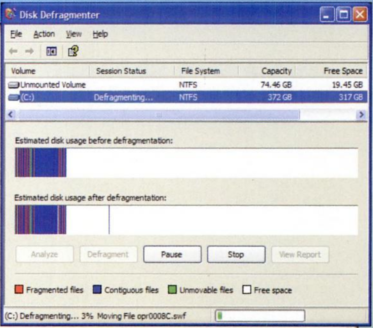
We're going to walk you through each tweak one-by-one, showing you the hard benefit we gained from each one. While your savings may vary, anyone who follows these steps will have a faster-booting PC, guaranteed.

FOREGROUND PHOTOGRAPHY BY MARK MADEO

FIRST, TAKE A MOMENT TO DEFRAG


TIME SAVED
0 SEC

You've heard it a million times, but we're going to say it once again—defrag your hard drive. The easiest way to improve performance in any type of disk-intensive operation, including booting, is to make sure the drive is defragged. Every clean install of Windows starts fragmented, and gets worse from there. When a drive is fragmented, chunks of each file are scattered all over the drive. In order to read them, the hard drive's read/write head has to jump all over the platters, which takes time. By placing as many bits as possible in sequential order on the platters, defragging allows your drive to transfer data at a much higher rate. The hard drive in our test system was in very good shape thanks to regular defrags, so this step didn't save us any time on boot. Regardless, it's just good housekeeping, so do it. DO IT NOW.

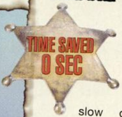

Disk Defragmenter
File Action View Help
Estimated disk usage before defragmentation:
Estimated disk usage after defragmentation:
Analyze
Defragment
Pause
Stop
View Report
Fragmented files
Contiguous files
Unmovable files
Free space

Volume	Session Status	File System	Capacity	Free Space
Unmounted Volume		NTFS	74.46 GB	19.45 GB
(C:)	Defragmenting...	NTFS	372 GB	317 GB

(C:) Defragmenting... 3% Moving File opr0008C.swf

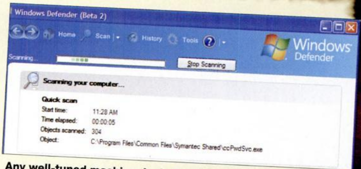
Looks like our hard drive house is in decent order. Yours might not be, so be sure to defrag before you do anything else.

MORE GOOD HOUSEKEEPING


TIME SAVED
0 SEC

This tip is about as sexy as John Goodman, but it has to be said: Before you even begin to tweak your PC's boot time, you have to make sure your computer is free of spyware, adware, and viruses. An infection by any one of these vile pieces of code can slow down your boot time more than you can imagine.

As we've said in the past, in order to combat today's multitude of threats, you've got to use a multi-pronged approach, including at least two anti-spyware apps and a good antivirus program. On our test machine, we're running *Windows Defender, Norton AntiVirus, and Spybot Search and Destroy.* We also type wearing rubber gloves, don a hazmat suit at our desk, and never ever open email attachments. You might not want to employ this level of protection, but for the love of your computer, protect yourself and your PC at all times.

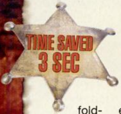

Windows Defender (Beta 2)
Home
Scan
History
Tools
Windows Defender
Scanning...
Stop Scanning

Scanning your computer...

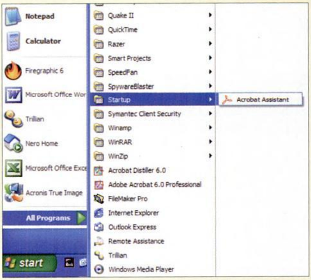
Quick scan
Start time: 11:28 AM
Time elapsed: 00:00:05
Objects scanned: 304
Object: C:\Program Files\Common Files\Symantec Shared\ccPwdSvc.exe

Any well-tuned machine, including one with a lightning-fast boot, will be free of spyware and viruses. We've been using *Windows Defender Beta 2*, along with *Norton AntiVirus* and a few other utilities, to fend off malicious code.

CLEAN YOUR STARTUP FOLDER


TIME SAVED
3 SEC

Now it's time to take a look at the Startup folder. While there are usually a few useful apps in there—think instant-messaging—it's full of benign but unneeded mini-applications that are part of larger programs. For example, installing Adobe *Photoshop* will install an app in this folder named Adobe *Gamma Loader.* Delete what you don't want from the Startup folder—and believe us, you can delete everything. There are no system-critical files here, so nuke and pave.


Notepad
Calculator
Firegraphic 6
Microsoft Office Wor
Trillian
Nero Home
Microsoft Office Exce
Acronis True Image
All Programs
start
Quake II
QuickTime
Razer
Smart Projects
SpeedFan
SpywareBlaster
Startup
Symantec Client Security
Winamp
WinRAR
WinZip
Acrobat Distiller 6.0
Adobe Acrobat 6.0 Professional
FileMaker Pro
Internet Explorer
Outlook Express
Remote Assistance
Trillian
Windows Media Player
Acrobat Assistant

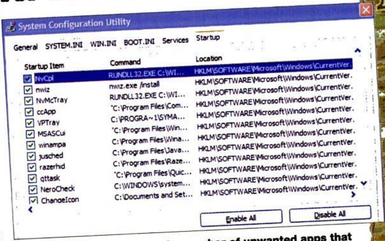
On our test machine, we had only one unexpected program in our Startup folder. Nearly any shortcut in this folder can be deleted with no ill side-effects.

CLEAN THE REST OF THE STARTUP FOLDERS

TIME SAVED
16 SEC

The files you just deleted from the Startup folder were decoys. There are several other top-secret, G3-clearance nooks of Windows that have the power to automatically start apps when Windows loads. To find these hidden spots, you'll want to use a tool called msconfig. (To start the app, click your Start Menu then Run and type `msconfig` in the bar.) Once you've started msconfig, you'll want to click on the Startup tab.

Every item in this tab runs *every* time you boot your PC, so cleansing this list can shave your boot time more than the rest of the tips combined, especially on systems with tons of applications installed. *NeroCheck*? Buh-bye. *iTunes Helper?* See ya. Anything having to do with your display, antivirus, or spyware utilities can stay. If you don't know what something is or what it does, it's better to err on the side of caution and leave it be. If you're pretty sure it's junk, delete it. We deleted 13 entries from this list for a grand total of 16 seconds saved.



Startup Item	Command	Location
☑ NvCpl	RUNDLL32.EXE C:\WI...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ nwiz	nwiz.exe /install	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ NvMcTray	RUNDLL32.EXE C:\WI...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ ccApp	"C:\Program Files\Com...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ VPTray	C:\PROGRA~1\SYMA...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ MSASCui	"C:\Program Files\Win...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ winampa	C:\Program Files\Wina...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ jusched	C:\Program Files\Java...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ razerhid	C:\Program Files\Raze...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ qttask	"C:\Program Files\Quic...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ NeroCheck	C:\WINDOWS\system...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.
☑ ChangeIcon	C:\Documents and Set...	HKLM\SOFTWARE\Microsoft\Windows\CurrentVer.

You probably didn't realize the number of unwanted apps that hitch a ride on your PC's boot process. Kick them to the curb using msconfig.

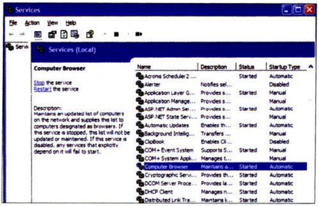
DON'T SETTLE FOR BAD SERVICE

TIME SAVED
9 SEC

The bastard son of msconfig's Startup tab is msconfig's Services section. Running unnecessary services every time you start your PC slows your boot time and wastes resources.

As you can see, there are dozens of services running on your computer, which makes it difficult to determine what's safe to disable. The easiest way to navigate the list is to check the box that says "Hide all Microsoft Services." Uncheck any obvious garbage you see (such as Microsoft Office Engine, CD burning apps, *QuickTime*, etc.), and then click OK. If there are some suspicious services installed, but you're unsure whether you can disable them, click the Start Menu, then Run, and type "services.msc" to open the services control panel. The services panel gives you much more detail about each service, so you can decide whether you want to disable something or leave it running.

To permanently disable a service, right-click it and select Properties. In the Properties menu, you can toggle its Startup value from Automatic to Manual. We removed seven items from our list, which saved seven seconds. We removed Ipodservice, Acronis Scheduler, Office Engine, Symantec Event Manager, and a few others. If you're using a home computer that is not connected to a network, you can disable the Workstation service as well. The Workstation service alone saved us two seconds.



Computer Browser

Description:
Maintains an updated list of computers on the network and supplies this list to computers designated as browsers. If this service is stopped, this list will not be updated or maintained. If this service is disabled, any services that explicitly depend on it will fail to start.

Name	Description	Status	Startup Type
Acronis Scheduler2 ...		Started	Automatic
Alerter	Notifies sel...		Disabled
Application Layer G...	Provides s...	Started	Manual
Application Manage...	Provides s...		Manual
ASP.NET Admin Ser...	Provides s...	Started	Automatic
ASP.NET State Serv...	Provides s...		Manual
Automatic Updates	Enables th...	Started	Automatic
Background Intellig...	Transfers ...		Manual
ClipBook	Enables Cl...		Disabled
COM+ Event System	Supports S...	Started	Manual
COM+ System Appli...	Manages t...		Manual
Computer Browser	Maintains a...	Started	Automatic
Cryptographic Servi...	Provides th...	Started	Automatic
DCOM Server Proce...	Provides la...	Started	Automatic
DHCP Client	Manages n...	Started	Automatic
Distributed Link Tra...	Maintains l...	Started	Automatic

Services are like TSRs—programs that start automatically when Windows boots. Though many are required by Windows, some are totally useless. Jettison them now.

Boot-Time Snake Oil

In our testing, we tried many tips that didn't improve our boot performance at all, made our PC boot slower, or worst of all, actually prevented our PC from booting. Here are a few "tips" you should avoid.

FONT DELETION: We tried deleting a bundle of unused fonts (at least the ones we thought were unused). It seemed like a good idea, since Windows has to load the fonts every time your PC boots. We deleted 94 fonts, but saw no benefit at all.

TWEAKING BOOT.INI: We also made some changes to the boot.ini file, which controls how the bootloader actually starts Windows. Unfortunately, our tweaks made our PC stop booting entirely. Beware.

DELETING TEMP FILES: Deleting your temp files is a good idea, for general tidiness' sake, but it doesn't help improve your boot time. The same goes for deleting "history" files, cache, and cookies.

TURNING OFF STARTUP SOUNDS: We don't like the Microsoft jingle anyway, but just for kicks we enabled and then disabled the startup sound, and it made zero difference in our boot time.

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BOOT-SPEED BIOS TWEAKS

TIME SAVED
2 SEC

The last of the relatively simple tweaks will require you to enter your system's BIOS. To get into the BIOS, you need to press F2 or Delete as soon as you turn on your PC.

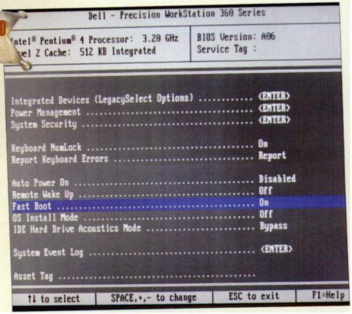
First, disable any unused hard drive or RAID controllers that are integrated on your mobo. You can usually find the controls for this hardware on the Integrated Peripherals or Chipset page. By disabling these controllers, you avoid a delay of up to 10 seconds, while the disk controller looks for devices that aren't there.

We also recommend disabling the floppy controller (if you don't have a floppy) and removing any extraneous boot devices from the boot sequence. For maximum boot speed, your hard drive should be the very first boot device.

You should also make absolutely certain you enable the Fast Boot option. Fast Boot lets your BIOS skip time-consuming tests—such as a full memory scan—to increase boot speed. Fast Boot is usually in the Advanced Chipset Features menu.

When you're looking at the settings for your hard drive controller, pay attention to the Hard Disk Pre-Delay. This setting essentially puts the boot process on hold to give your hard drives a moment or two to spin up. Set this to the lowest setting that still lets the BIOS detect your hard drives.

Finally, disable any unused I/O devices, such as COM and parallel ports, then reboot back to Windows.



```
                    Dell - Precision WorkStation 360 Series

ntel® Pentium® 4 Processor:  3.20 GHz      BIOS Version: A06
vel 2 Cache:  512 KB Integrated            Service Tag :

Integrated Devices (LegacySelect Options) ............ <ENTER>
Power Management ..................................... <ENTER>
System Security ...................................... <ENTER>

Keyboard NumLock ..................................... On
Report Keyboard Errors ............................... Report

Auto Power On ........................................ Disabled
Remote Wake Up ....................................... Off
Fast Boot ............................................ On
OS Install Mode ...................................... Off
IDE Hard Drive Acoustics Mode ........................ Bypass

System Event Log ..................................... <ENTER>

Asset Tag ............................................

↑↓ to select | SPACE,+,- to change | ESC to exit | F1=Help
```

This Dell BIOS is rather limited in terms of options—just the way IT workers like it—but enthusiast boards usually have plenty of options that most users can shut off.

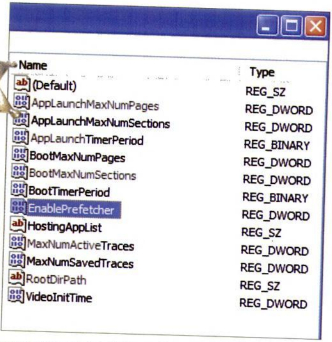
TRAIN WINDOWS TO FETCH

TIME SAVED
7 SEC

Windows XP always tries to anticipate the programs and files you'll need before you need them. Whenever you run a program or open a file, Windows will add key bits of the file to the prefetch folder on your hard drive, so the next time you open the app, it can deliver it to you faster. Sometimes, however, Windows becomes overzealous, and prefetches items you don't need, sucking up valuable system resources for apps or files you no longer have or use. You can see what Windows is prefetching by going to C:\Windows\Prefetch.

First, go into the prefetch folder and delete everything. Then open Regedit and navigate to HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Memory Management\PrefetchParameters. Look for "EnablePrefetcher" in the right-side pane. Right-click it and select Modify. If you change the value to 2, it will only prefetch boot items. Type in 3 and it'll prefetch applications and boot items, which we recommend. Finally, close Regedit, and restart your computer several times to allow Windows to reconfigure the prefetch to cache what it needs.

If you'd rather specify the apps that are prefetched manually, you can set EnablePrefetcher to 2. Then, for any app you want to prefetch, right-click the app's shortcut and add /prefetch:1 to the end of the Target line. This will add that app to the prefetch list.



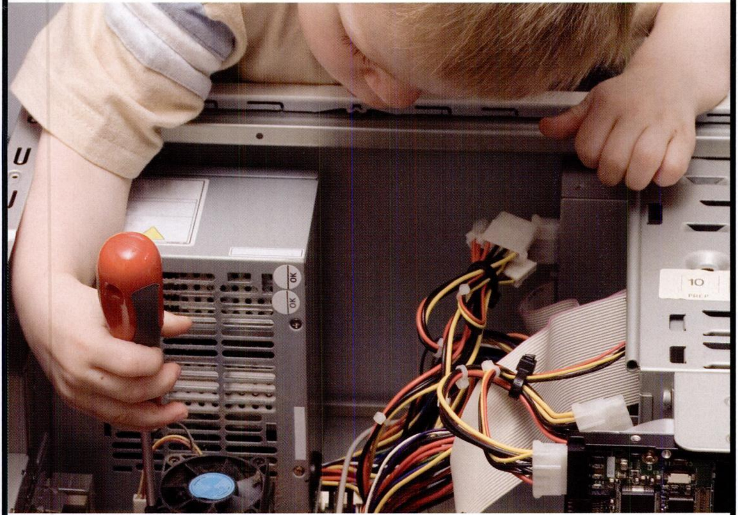
```
Name                          Type
(Default)                     REG_SZ
AppLaunchMaxNumPages          REG_DWORD
AppLaunchMaxNumSections       REG_DWORD
AppLaunchTimerPeriod          REG_BINARY
BootMaxNumPages               REG_DWORD
BootMaxNumSections            REG_DWORD
BootTimerPeriod               REG_BINARY
EnablePrefetcher              REG_DWORD
HostingAppList                REG_SZ
MaxNumActiveTraces            REG_DWORD
MaxNumSavedTraces             REG_DWORD
RootDirPath                   REG_SZ
VideoInitTime                 REG_DWORD
```

Windows' prefetch feature will automatically load commonly used applications and boot files, but with a simple Registry hack you can limit it to files related to booting.

Professional PC Diagnostic Tools

ULTRA-X TESTED QUALITY CERTIFIED

SWAPPING COMPONENTS
DOESN'T MAKE MUCH SENSE EITHER.



You don't have time for trial and error or tools and methods that only provide part of the picture. That's why Ultra-X's quick & accurate diagnostics help you detect and isolate problems as well as those annoying intermittent problems. Whether you build new computer systems, provide computer repair services or simply maintain a fleet of PC's running smoothly, take a closer look to see how Ultra-X test tools will make your job a whole lot easier.

Quick. Simple. Accurate.

Random Lockups?

Blue Screens?

Fatal Exception Errors?

Seemingly Dead System?

NO PROBLEM!

Quickly & Accurately Isolate Issues!

ULTRA-X, INC
www.uxd.com

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NexStar MX
POWER
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HDD 2
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VANTEC

NexStar MX

DUAL 3.5" SATA HDD ENCLOSURE

MORE to STORE

MUSIC PHOTO GAME MOVIE

STORE UP TO 2 TERABYTES

Vantec NexStar MX Dual Bay External Hard Drive Enclosure is a quick and simple way to expand storage capacity to your computer. It comes without the hassle of diving inside the PC and messing with all the wires, cables and connections. The sturdy drive cage protects your hard drive while the stylish aluminum case effectively draws away the heat; the front vents and rear fan keep your hard drive(s) cool and improve performance. Add two independent SATA I/II hard drives or configure into a single JBOD drive for up to 2 terabytes of drive space. Easy-to-use Arcsoft Totalmedia Backup™ software allows you to archive precious family photos, music, videos, and games with three easy clicks. The Vantec NexStar MX Dual is a high performance, capacity, and durable storage solution and lets your store your personal data in an enclosure with style!

CERTIFIED HI-SPEED USB SERIAL ATA COOLING PLUG N PLAY ArcSoft TotalMedia Backup™

- Supports 2 SATA I/II Hard Drives Up to 2.0 TB of Storage
- USB 2.0 External Interface Allows You to Transfer Data Up to 480 Mbps
- Front Ventilation and Rear Fan for Better Air Circulation and Cooling
- Stylish Aluminum Case to Draw Away the Heat
- Easily Add Up to Two Independent Hard Drives
- Supports JBOD Configuration; Turn Two Hard Drives Into One
- Simple Plug & Play Connection; Does Not Require Drivers
- Arcsoft Totalmedia Backup™: Archive Photos, Music, Video and Data With Three Easy Clicks

newegg.com TigerDirect.com Fry's ELECTRONICS MICRO CENTER The Ultimate Computer Store PCMall mwave.com CYBERGUYS.COM Nationwide Supplier of Computer Products eCOST.com ZipZoomfly.com

for more information on where to buy please go to

http://www.vantecusa.com/wheretobuy.html

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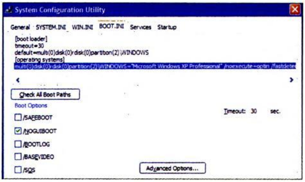
FASTEST BOOT

DUMP THE XP SPLASH SCREEN

TIME SAVED
2 SEC

Every time you boot, you stare at it. The same Windows XP splash screen you've been looking at since 2001. Here's how you can disable it, and eke another couple seconds from your boot. To disable the splash screen, open msconfig, and go to the boot.ini tab. Check the box labeled /NOGUIBOOT, and then restart your PC.


System Configuration Utility
General
SYSTEM.INI
WIN.INI
BOOT.INI
Services
Startup
Check All Boot Paths
Boot Options
Advanced Options...

```
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Microsoft Windows XP Professional" /noexecute=optin /fastdetec
```

☐ /SAFEBOOT
☑ /NOGUIBOOT
☐ /BOOTLOG
☐ /BASEVIDEO
☐ /SOS

Timeout: 30 sec.

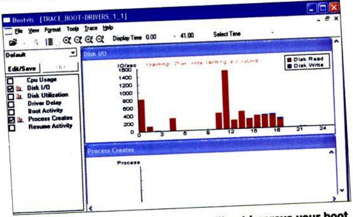
Goodbye, XP splash screen. We won't miss you.

MICROSOFT PITCHES IN WITH ITS OWN OUTLAW UTILITY

TIME SAVED
4 SEC

You might have heard about Microsoft's own boot-time optimization tool named *Bootvis*. It's been around since the launch of Windows XP, but for some reason Microsoft publicly disowned it shortly after XP's launch. According to the company, "Bootvis.exe is not a tool that will improve boot/resume performance for end users." Microsoft claims *Bootvis* just triggers the boot optimization routines that are built into Windows XP. On our test system it shaved an impressive four seconds off boot. You should be able to find the utility using Google.

Once it's installed, run the app, and click Trace, then Boot + Driver Delays. After rebooting, it'll show you an analysis of your boot sequence. Click Trace, then Optimize, and it'll reboot once again and make optimizations to your system.


Bootvis - [TRACE_BOOT-DRIVERS_1_1]
File
View
Format
Tools
Trace
Help
Display Time 0.00
- 41.00
Select Time
Default
Edit/Save
Disk I/O
IO/sec
1600
1400
1200
1000
800
600
400
200
0
0
3
6
9
12
15
18
21
24
Disk Read
Disk Write
Process Creates
Process

☐ Cpu Usage
☑ Disk I/O
☐ Disk Utilization
☐ Driver Delay
☐ Boot Activity
☑ Process Creates
☐ Resume Activity

Microsoft swears its *Bootvis* utility will not improve your boot times, but it helped us. You should give it a whirl.

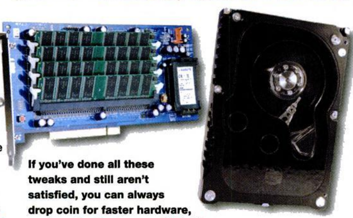
FINAL THOUGHTS

TIME SAVED
31 SEC

Now that we're done testing, we're quite pleased with our handiwork. On our final timed run with all of our tweaks enabled, the boot went from 79 seconds to 48 seconds, a net savings of 31 seconds! Over the course of a year, if you boot your PC once a day, you'll save three hours. That's enough time to procreate, go to the DMV, or organize your *Maximum PC* archive.

There are a lot of tips we tried that turned out to be nothing but hogwash, but other techniques surprised us with their effectiveness. By pruning the BIOS and OS, anyone should be able to achieve a faster boot.

If you've gone through all of the tweaks and tips listed here, and your machine is still too slow for your liking, the only way you'll really improve performance further is to buy a faster hard drive. Because much of the boot process involves disk reads, a snappy 10,000rpm hard drive will certainly speed things along. For example, a fresh install of Windows XP boots in 38 seconds on a WD4000KD 7,200rpm drive. The same install boots in a scant 31 seconds on a 74GB Raptor. If that's not fast enough for you, you can always install a RAM drive. We installed Windows XP onto the Gigabyte i-RAM (reviewed on page 68) and managed to get a clean install of Windows to boot in a smoldering 24 seconds. MPC



If you've done all these tweaks and still aren't satisfied, you can always drop coin for faster hardware, such as the Raptor or a RAM drive.

WE WANT YOUR TIPS!

*Do you have a tested and true tip for **decreasing boot time?** Send it to **input@maximumpc.com. We'll run the best reader-submitted tips** in an upcoming issue.*

It's Always the PSU...

FrozenCPU's ATX 2.0 Ultimate LCD Power Supply Tester provides individual voltage readings from a PSU's various rails, and it'll even help you troubleshoot booting issues related to the PSU's Power Good signal. **$28, www.frozencpu.com**

...Or the RAM

Yes, RAM is also quite often a culprit in funky system behavior these days. Ultra-X's R.S.T. Pro2 PCI-E (also available in PCI or USB) lets you pinpoint RAM issues with industry-standard and proprietary test patterns. The R.S.T. is so well respected that major RAM and CPU vendors use it to validate memory. It's expensive, but good. **$800, www.uxd.com**

Nuts and Volts

Extech's MiniTec MN26 is affordable and handles many of the tasks involved with PC fixin'. Probes on the MiniTec let you measure any device's AC and DC voltages and currents, temperatures up to 1,400 F, and even circuit resistance. **$40, www.extech.com**

CSI: Hard Drive

Just connecting a victim's hard drive to your laptop could potentially wipe out vital data you're trying to recover. WiebeTech's Forensic ComboDock v4 provides a safety net: Connected to both your PC (via USB or FireWire) and the hard drive, it will let you access the drive's data while ignoring any write requests. You can also use it to connect your own drive full of software tools to an ailing PC without the risk of a virus or worm infecting your collection. **$400, www.wiebetech.com**

ZALMAN
IBM
DYNAMED
DREMEL STYLUS

Emergency 51

Rolling code 3 to your Aunt Wendy's house for a PC emergency? Whelen's Responder Cadet will clear those black-and-white VW Bugs out of the way (check your local and state regulations regarding emergency lights). **$77, www.whelen.com**

Have Monitor, Will Travel

Is your mom's videocard kaput or is the monitor the problem? You won't know without hauling your own monitor with you. Xenarc's diminutive 700Y features an analog VGA input and will fit nicely into your trauma kit. **$320, www.xenarcdirect.com**

MAXIMUM PC's ULTIMATE PC TRAUMA KIT

With the right collection of tools, you can tackle any PC problem with utmost efficiency. Get in, get out, and get on with your life!

BY GORDON MAH UNG AND PAUL LILLY

We call it community tech support—the use of an informal friends network for PC repair rather than the services of paid professionals. In reality, however, that means *your* entire community of friends and family relies on *you* to solve their latest computer problems.

We'd never suggest that you harden yourself to the desperate pleas of a computer-illiterate relative—no, you should just learn to accept that from time to time you have to use your PC superpowers for good. But we do suggest that you be smart about it: The better prepared you are when disaster strikes, the less time you'll spend crawling around under Aunt Kim's desk.

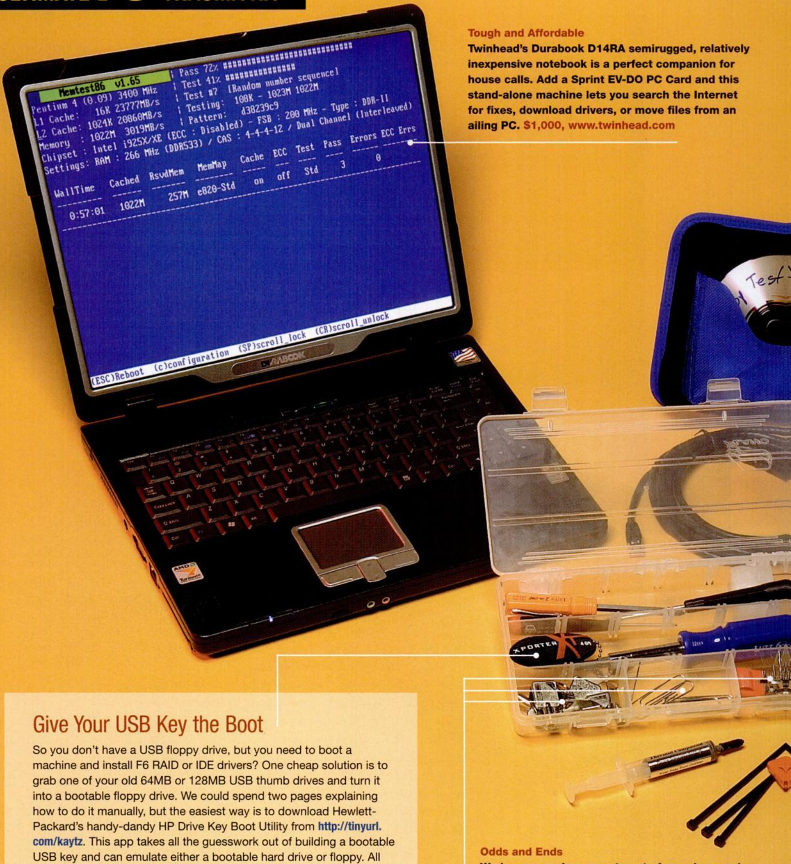
Over the following pages, we show you all the hardware and software tools that fill Maximum PC's grab-it-and-go PC trauma kit—these items should enable you to fix the majority of PC problems you'll face in the field. If you can't fix a computer crisis with this gear, you'll need to medevac that PC to your home for more serious tinkering.

What's in Here?

Tackle boxes make great storage containers and are found at most sporting goods stores. Turn the page to see how we use ours.

Floppy Lives On

Contrary to popular belief, Windows XP install discs *will* support a USB floppy drive for F6 drivers—as long as it's one of three specific drive models. And of those three, you're likely to find only IBM's USB Portable (it must have these part numbers: ASM P/N 27L4226, FRU P/N 05K9283). This puppy lets you install F6 drivers via USB without having to build a slipstream disc or hack the INF files. Search eBay for this product.



```
    Memtest86  v1.65        | Pass 72% ################################
Pentium 4 (0.09) 3400 MHz   | Test 41% #################
L1 Cache:   16K 23777MB/s   | Test #7  [Random number sequence]
L2 Cache: 1024K 20860MB/s   | Testing:  108K - 1023M 1022M
Memory  : 1022M  3019MB/s   | Pattern:   d38239c9
Chipset : Intel i925X/XE (ECC : Disabled) - FSB : 200 MHz - Type : DDR-II
Settings: RAM : 266 MHz (DDR533) / CAS : 4-4-4-12 / Dual Channel (Interleaved)

 WallTime  Cached  RsvdMem   MemMap   Cache  ECC  Test  Pass  Errors ECC Errs
 --------- ------  -------  --------  -----  ---  ----  ----  ------ --------
  0:57:01  1022M     257M   e820-Std    on   off   Std     3       0
 -----------------------------------------------------------------------------

(ESC)Reboot  (c)configuration  (SP)scroll_lock  (CR)scroll_unlock
```

Tough and Affordable

Twinhead's Durabook D14RA semirugged, relatively inexpensive notebook is a perfect companion for house calls. Add a Sprint EV-DO PC Card and this stand-alone machine lets you search the Internet for fixes, download drivers, or move files from an ailing PC. $1,000, www.twinhead.com

Odds and Ends

We keep a random assortment of case keys we've collected over the years. Most of the time, one of them can unlock a case when the owner has misplaced his key. Various paper clips work great to eject discs from dead optical drives. And we can rebuild a drive power connector that's gone bad using pins we bought from Fry's and a quick-release Molex from Vantec.

Give Your USB Key the Boot

So you don't have a USB floppy drive, but you need to boot a machine and install F6 RAID or IDE drivers? One cheap solution is to grab one of your old 64MB or 128MB USB thumb drives and turn it into a bootable floppy drive. We could spend two pages explaining how to do it manually, but the easiest way is to download Hewlett-Packard's handy-dandy HP Drive Key Boot Utility from http://tinyurl.com/kaytz. This app takes all the guesswork out of building a bootable USB key and can emulate either a bootable hard drive or floppy. All you need is your USB thumb drive, an image of the floppy you want to install (available from Bootdisk.com), and a few minutes.

Software Saviors

No trauma tech should be without a healthy assortment of software, including OS discs from which to grab various CAB files. Other essentials include Memtest+ (www.memtest.org), an up-to-date BartPE disc (see following page), a copy of Windows XP Service Pack 2, QueTek's File Scavenger—which lets you boot from a floppy and recover data from dying drives (including broken RAID 0 arrays)—and the free Ultimate Boot CD (www.ultimatebootcd.com). See the following page for more must-have utilities.

Scrappy Metal

We don't know the technical name for that little slab of metal that covers the unused add-in slots in your case, but it sure comes in handy. You can use the bent side to undo the PCI-E graphics retention clip in many motherboards and use the other side as an ad-hoc screwdriver to remove stock Intel heatsinks.

Use Your Head

You'll often need both hands to work on a PC, so a headlamp like Petzl's TIKKA XP gives you even, bright white light while leaving your hands free to tinker. $45, www.petzl.com

The Full Load-Out

Maximum PC's trauma-kit checklist

MUST-HAVE ITEMS

- Hard drives, both SATA and PATA
- RAM, all types
- Screwdrivers of different sizes
- Power supply
- Graphics card
- Canned air
- Case fan
- Universal CPU heatsink and fan
- Flashlight
- Keyboard and mouse
- Floppy drive with floppy cable
- Notebook or SFF PC
- USB-to-parallel ATA adapter
- Screws of various sizes
- PSU tester
- Cables: IDE, SATA, power, USB, FireWire, Y-splitter, crossover, LAN, and floppy
- Jumpers
- Motherboard standoffs
- DVI-to-VGA adapter
- CD-ROM ejector (paper clip)
- Zip ties
- Thermal paste
- Software
- Earbuds

LUXURIES

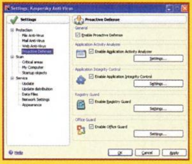
- Spare CPUs
- Hardware RAM tester
- Soundcard
- Network card
- USB card
- Headlamp
- USB floppy
- Write-blocked USB-to-PATA/SATA adapter
- Needlenose pliers
- Battery-operated Dremel tool
- Portable monitor
- USB portable hard drive

Software, Stat!

Whether you're working to fix an existing problem or prevent future issues, these five utilities can save a system's life

KASPERSKY ANTI-VIRUS 6.0

Any antivirus scanner is better than none at all, but Kaspersky is not just *any* scanner. Packed to the brim with features, we're most enamored with the hourly updates that keep you safe from new viruses almost as fast as they come out. And while most scanners offer some form of real-time protection, Kaspersky takes it a step further by also detecting harmful incoming software before it can even be saved to your PC. Rootkit protection is included too, along with port monitoring, email scanning, and a registry guard! **$50, www.kaspersky.com**



Proactive Defense

General

☑ Enable Proactive Defense

Application Activity Analyzer

☑ Enable Application Activity Analyzer

Application Integrity Control

☑ Enable Application Integrity Control

Registry Guard

☑ Enable Registry Guard

Office Guard

☑ Enable Office Guard

A-SQUARED ANTI-MALWARE 2.1

When it comes to combating spyware, there's A-Squared and there's everything else. A-Squared routinely picks up threats that other programs miss. Rather than rely on heuristic scanning alone, A-Squared monitors for suspicious activity, such as transferring data over the Internet without your consent, and then lets you decide what action to take. You can even manage active processes, browser plugins, your hosts file, and cookies, making this the most robust antispyware package we've ever used. If all you need is a capable scanner, check out the free version. **$40, www.emsisoft.com/en/**

QUETEK FILE SCAVENGER 3

We've all experienced that gut-wrenching feeling that follows unexpected data loss, whether by accidental deletion, a hard drive crash, or some other unfortunate calamity. But all need not be lost, thanks to QueTek's File Scavenger, a nifty little utility capable of recovering files in even the direst circumstances. Already reformatted and partitioned your drive? No problem! File Scavenger can still recover those lost files, and it works with both FAT and NTFS file systems. Play the part of hard drive hero as you wade through a drive with bad sectors or reconstruct a broken RAID array (RAID 0 reconstruction requires an $85 version of the app). **$49, www.quetek.com**

NORTON GHOST 10.0

A picture's worth a thousand words, but an image can save you countless obscenities. We're of course referring to disk imaging, and Norton Ghost works so well that "ghosting" has become a verb among techs. After creating a recovery point, incremental backups ensure you'll always have a recent snapshot to fall back on should your system end up on the fritz for any number of reasons, including a software install gone bad. You can encrypt your images too, making portable media a viable option for the security conscious. And should you need access to a single file, Ghost lets you browse the contents of any restore point. **$70, www.symantec.com**

ZONE LABS ZONEALARM

Let's face it: The built-in firewall that ships with Windows may offer Aunt Mabel sufficient protection for browsing recipe sites and Knitting.com, but it doesn't give power users that warm and fuzzy feeling that third-party alternatives provide. While the Windows firewall guards against inbound traffic, ZoneAlarm also puts the brakes on outbound requests, halting programs from dialing out without first getting your permission. Cast an even bigger shield with the Internet lock, which can be activated after a set period of inactivity or whenever the screensaver kicks in. ZA even integrates with eBay, preventing you from transmitting your password to phishing sites. **Free, www.zonelabs.com**

ZONE
STOP
Firewall
Help
Overview
Firewall
Program Control
E-mail Protection
Alerts & Logs
Name
IP Address / Site
Entry Type
Zone
Add IP Address
Add
Zone
IP Address
Description
OK
Cancel
Entry Detail
Name
Zone
Entry Type
IP Address / Site
Edit

Build a BartPE Disc

The majority of calls you face are usually the result of an OS that's been borked by malware or general corruption. One of the best tools to remedy such a situation is a BartPE (preinstalled environment) disc, which you create with the free BartPE Builder app. A BartPE is your own bootable Windows CD or DVD that you can use to troubleshoot a sickly system. The basic build gives you file-copy capabilities and some network access. But the real magic happens when you add plugins for antivirus programs, recovery apps, and partitioning tools. Many popular utilities feature a special BartPE version or configuration files meant to run directly from a BartPE disc.

To build your own BartPE, grab your Windows XP disc, download the BartPE setup files at **www.nu2.nu/pebuilder/**, follow the instructions for creating the disc, and browse the available plugins. Clicking the help button on a plugin gives you detailed steps on how to enable it. For example, to enable McAfee Stinger, you download the application, install it to the BartPE plugin directory, and then enable the plugin. Free plugins for many popular utilities and AV programs are available on the web, but some may require tweaking.

Pulling the Plug on Life Support

Get the feeling you're being taken advantage of? That can happen when people think you're 1-800-FREE-PC-HELP-ALL-THE-TIME. If you're too nice to say, "Sorry, no," try one or more of these one-liners to get a clueless computard off your back.

1. **I bought a Mac, so I'm not up on current PC problems.**
2. **I can't come over; I'm waiting for my electric car to charge.**
3. **Sorry, I've been outsourced.**
4. **I'm going to have to charge you $200 an hour, plus expenses.**
5. **You live near a school and my parole officer says I can't be within 1,000 feet of one.** MPC

Replace Your Laptop Screen

Don't just throw your busted notebook PC in the trash, replace that broken screen!

TIME 00:30 HOURS:MINUTES

WHAT YOU'LL NEED

- **X-ACTO KNIFE**
- **PRECISION SCREWDRIVER SET**
- **REPLACEMENT LCD**

Nothing will sink your heart more than opening your notebook PC to find the screen shattered. Well, you think, there goes $2,000! Maybe not. You may be able to replace the screen yourself for far less than sending it back to the vendor for repair. While the PC vendor may charge you a $1,000 to replace a 17-inch panel, you may be able to buy the screen for $500 from ScreenTekinc.com and do it yourself in half an hour.

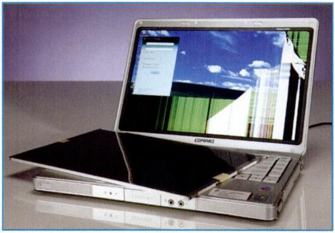
BY GORDON **MAH UNG**

1 Is it even broken?

Step 1: First make sure that your notebook panel is actually broken. Don't assume that if you press the power button and nothing happens that the panel has gone blank. It could be a bad AC adapter that can't power your notebook or the internal connector inside the notebook has failed (a very common problem that occurs when people yank on the power cable). Of course, also make sure that it isn't stuck in external mode after plugging it into an external monitor.

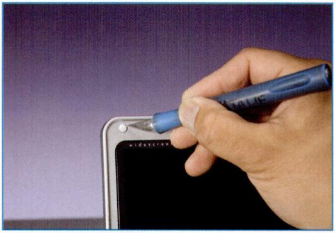
2 Is it worth it?

Step 2: With notebook prices hovering at record lows, does it really make sense to spend $300 to replace the panel on a $500 notebook? No. But what about a $1,000 notebook, or a $2,000 notebook? Assuming that the rest of your notebook wasn't trashed in the screen-breakage incident, a $300 or $500 investment may make more economic sense than buying new. For this how to, we use an elderly Compaq Presario V2000. It probably doesn't make sense to replace the panel for $300 on this notebook for most people, but it's a great example to us as many notebooks use the same technique. Additional removal instructions for other notebooks and price lists for screens are available at screentekinc.com.



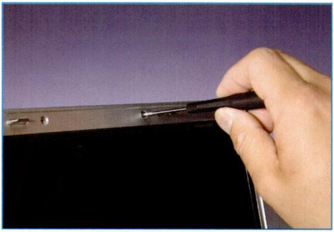
3 This screen is trashed.

This screen is goner. But we have sentimental attachment to this notebook so we're repairing the screen. Before you actually buy the new screen though, you should see if you if can get the bezel off.



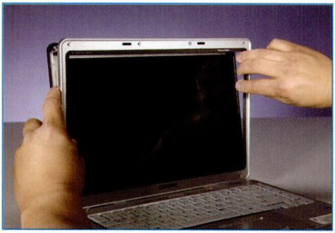
4 X-ACTO the rubber

Unplug the notebook (duh!) and, just to be safe, remove the battery from the notebook. The first step of the screen repair is to unscrew the screws that hold the bezel together. Access to the screws is usually hidden behind the little rubber nubs that are glued in place. To remove them, use the tip of an X-acto blade to pop them off.



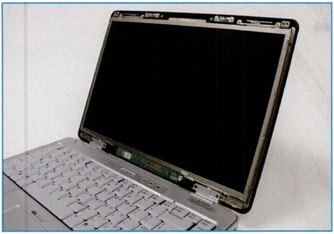
5 Unscrew it

Now use a precision screwdriver to unscrew the bezel. The V2000 used a total of six screws. Put the screws in a coffee mug or glass for safe keeping.



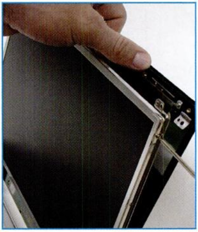
6 Pry it loose

This is the tricky part. Pry the bezel loose by gripping it with your fingers and pulling it away from the screen. You want to use enough force to remove the bezel, but not enough to break it. The good news is that you can't break the screen anymore can you? This "technique" is actually quite different than the one you'll find if you managed to get the service manual from your notebook maker. If you wanted to take the safe and sane way, you'd have to practically disassemble the entire notebook just to get at the panel.



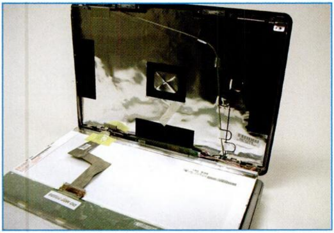
7 Bezel be gone

The actual LCD panel
You've done the hard part already and here's what your notebook looks like without the panel.



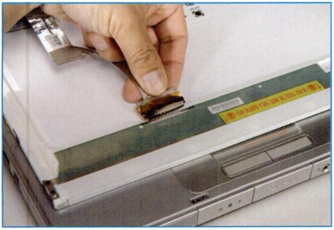
8 Frame job

The actual LCD panel should be attached to a metal frame. To remove it, push the rear lid away from the frame and unscrew the frame from the LCD.



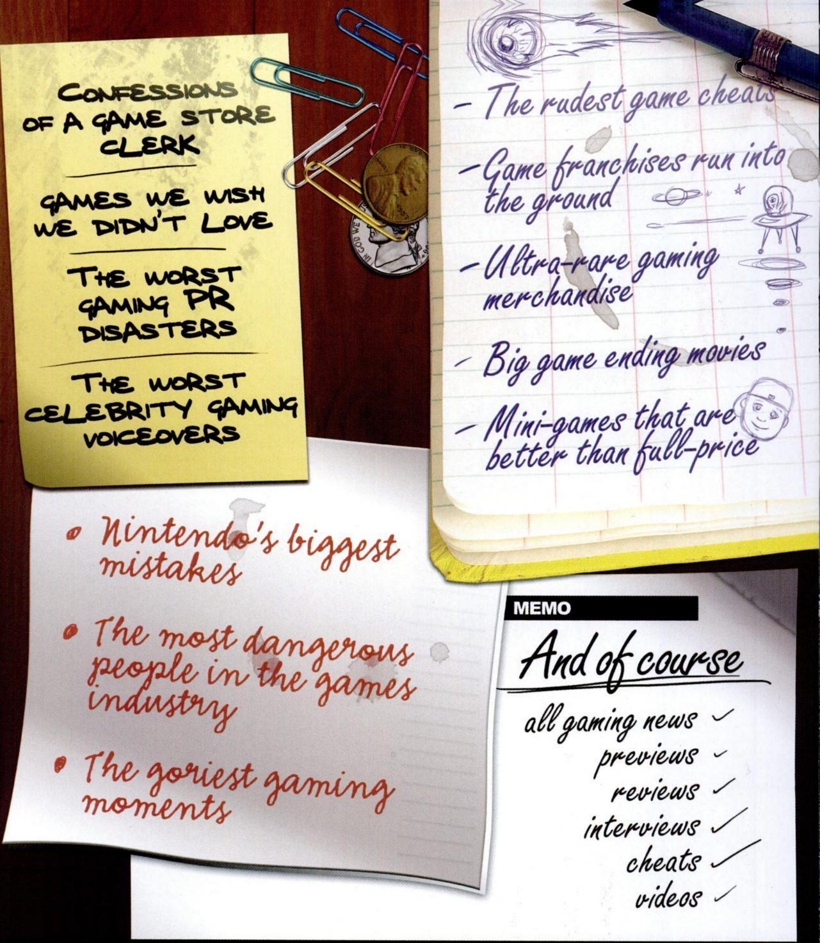
9 Panel out

You can now fold the LCD panel forward. The ribbon cable is the internal digital connector. You can also see the antennas for the notebook's Wi-Fi on the lid. On the back of the panel, you should be able to find part numbers for the panel in your notebook. You can run the part numbers through ScreenTek's web site or call them to order a direct replacement panel.



10 Pull the ribbon

To remove the ribbon cable, carefully pull it out of the connector from the panel.



CONFESSIONS OF A GAME STORE CLERK

GAMES WE WISH WE DIDN'T LOVE

THE WORST GAMING PR DISASTERS

THE WORST CELEBRITY GAMING VOICEOVERS

- The rudest game cheats
- Game franchises run into the ground
- Ultra-rare gaming merchandise
- Big game ending movies
- Mini-games that are better than full-price

- Nintendo's biggest mistakes
- The most dangerous people in the games industry
- The goriest gaming moments

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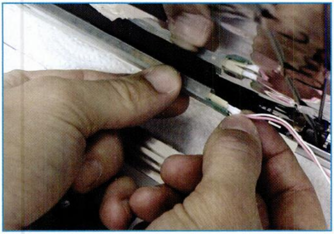
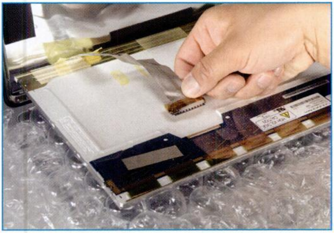


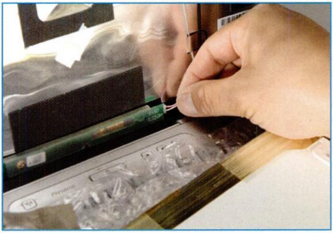
11 Invert the inverter

At the bottom of the panel, you'll see a connector that hooks the panel to the power inverter. You'll also need to disconnect this from the panel to complete the removal.

12 Ribbon the cable

With the broken screen, we didn't give a damn about scratching it but take care as to not scratch your replacement panel. We put clean bubble wrap under the new panel. First, hook up the ribbon panel by carefully inserting it into the connector. Do the same for the inverter power cable and then lift the new panel into place and screw it into the frame. You may actually want to power up your notebook at this point to see if it worked. We've found that there is very little play in the ribbon cable and inverter power cable so they may get disconnected if the panel is jiggled at all. If the panel boots up and appears to work, you're in good shape.

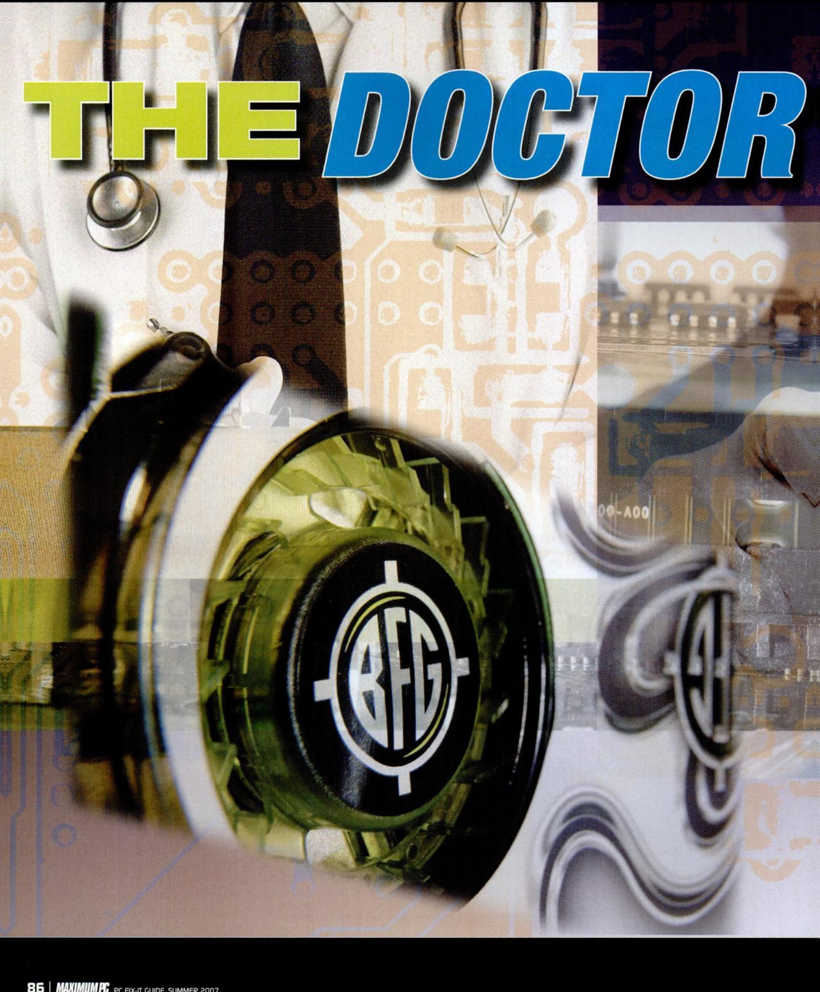




13 You're Done!

Now, carefully put the bezel back on, screw it in place and pop the nubs back in place. You're all done and good to go! MPC

THE DOCTOR



IS IN!

You've got pressing questions about your rig, software, or the meaning of life. The Doc has all the answers – well, most of 'em!

TROUBLESHOOTING 101

In July, I bought an Asus A8N-VM-CSM motherboard, two 512MB sticks of PC3200 RAM, an Athlon 64 3200+ CPU, and an AOpen 400W power supply. Everything was going great until the other day. Now, when I turn on the computer all I get is the hard drive light, which stays on. A computer tech service tells me it could be that the motherboard, RAM, or videocard has gone bad. One guy said it could even be the hard drive. I'm not even getting the BIOS message. The service charges $50 or more to troubleshoot computers. Can you give me your opinion of what it might be?

—Gordon Temple

It could indeed be the motherboard, RAM, or hard drive, but that's like saying the problem could be the computer. Before you ask the shop to troubleshoot your machine, there are a few things you can try yourself. First, take off the side of the case with the machine plugged in and power it up. Check to see if the CPU fan is spooling up and if the drives are spinning. If they're not, the Doctor would suspect a power supply issue. Make sure the main power connector—that big plug going into the mobo—is firmly in place, as is the square ATX 12V connector. Also make sure the power cables going into the optical drive and hard drive are firmly in place. Try to boot. If the PC doesn't boot, pull the AC cable, wait one minute, and short the jumper to reset the CMOS. Try booting the machine again. Because the HD activity light is "stuck," try pulling the cables going to the optical drive and hard drive and boot again to see if it's something as simple as a bad cable stopping the boot. The Doc doesn't think so, but it's worth a shot. If it doesn't work, unplug all of the extra power cables in the machine going to the drives, fans, or any other items you have, unplug any USB devices, and disconnect the hard drive and optical drive cables from the motherboard, but make sure the monitor cable is plugged in. If the machine doesn't fire up with the extra components unplugged, pull out one of the RAM modules and try to boot the machine (make sure the machine is completely powered down and the PSU is discharged by unplugging the AC cord for a couple of minutes). If it still fails, put the module you just pulled back into the box, remove the other module, and try to boot again.

At this point, you're getting down to a bad board, bad CPU, or bad PSU. CPU failures are very rare, but it could be something as simple as the thermal paste on the CPU drying out. This would cause the chip to overheat within a few seconds and shut down, but normally the HD LED would not be on in these situations. If you've gone this far with no POST, the Doc's gut instinct says it's a bad power supply.

Just as some medical doctors are obsessed with curing diseases, Maximum PC's Doctor is a certified fanatic when it comes to resolving readers' thorniest computer problems. Send your questions—and your obsessions—to doctor@maximumpc.com before things get out of hand.

THE DOCTOR IS IN!

JUST CHILLIN'

I have a Compaq Presario s4000t I bought in 2003, and it has gone cold, literally! It won't boot if the temperature is below 55 degrees. All the fans come on, and that's about it. I'll push the Power button and after about two minutes, I reboot and my computer will work.

I have upgraded from the stock 250-watt power supply to a 400-watt PSU, and the CPU still has the stock TaiSol heatsink and fan on it. Is this a power-switch issue? Do you think I need to replace the heatsink and fan? A friend told me to try editing the BIOS—disable the cache, reduce memory clock speed, and check temperatures. Any other ideas?

—Dave Howell

You have an odd problem that the Doctor has not seen before, but he can take a shot. Your problem may not actually be related to winter temperatures, as 55 degrees is hardly that cold and most computers prefer colder climates to warmer ones. But maybe, just maybe, the humidity is a factor at the colder temps. The Doc is guessing that some component in your PC doesn't like the dampness in the winter months. One other possibility: bad capacitors. Get a flashlight and look at the capacitors on the motherboard. If any are bulged out or oozing, they may be defective—a problem that was endemic in machines and motherboards of that vintage.

USB-ORKED

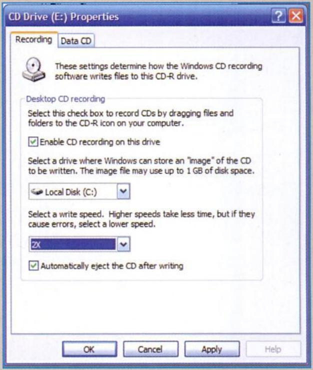
I cannot figure out what is going on with my front-panel USB ports! Every now and then, when I plug in a device, my computer does a hard restart. I initially thought maybe the front panel wasn't grounded correctly and was shorting out the motherboard, but oddly enough, a few weeks later my brother experienced the same problem. We both have Gigabyte GA-8S661FXM-775 mobos housed in different cases.

—Matt Lazarow

The Doctor hasn't seen that particular SiS chipset–based motherboard, but an issue was reported with Windows XP SP2 and certain SiS USB controllers. The fix from Microsoft (Microsoft Knowledge Base item 892050) indicates a problem with devices not being detected, not spontaneous rebooting. The Doc suspects you have a hardware problem, but not necessarily a problem with your motherboard.

You need to double-check that you connected the USB header correctly to the board. You should also check to see if the USB cable going to the front of the case is shorting out inside the case. Oddly, low-quality power supplies can also cause problems with USB devices.

The Doc also recommends that you unplug all the USB devices going into the machine and uninstall any USB devices from the Device Manger. Restart and let XP redetect the devices. Finally, make sure the devices you're plugging into the machines don't have issues. It's unlikely, but maybe you're both using faulty USB devices.



These settings determine how the Windows CD recording software writes files to this CD-R drive.

Desktop CD recording

Select this check box to record CDs by dragging files and folders to the CD-R icon on your computer.

☑ Enable CD recording on this drive

Select a drive where Windows can store an "image" of the CD to be written. The image file may use up to 1 GB of disk space.

Local Disk (C:)

Select a write speed. Higher speeds take less time, but if they cause errors, select a lower speed.

2X

☑ Automatically eject the CD after writing

Just burn that audio CD a little more slowly, and you'll be rocking out in no time.

BURNED CD BLUES

If I burn an audio CD using either Windows Media Player in Windows or Serpentine in Ubuntu Linux, my car stereo won't play it. Yet if I use Nero, it works. I tried using a different brand of CD-R, but that didn't make a difference. What's weird is I can sometimes coax the CD into playing in my car stereo by hitting the Track button rapidly after inserting the CD.

Do Windows Media Player and Serpentine physically burn CDs differently than Nero, or is this a DRM issue of some sort? Again, CDs that I burn with Nero and normal audio CDs work fine.

—Andrew Robertson

The Doctor's car stereo does exactly the same thing. The solution is simpler than using a different app to burn your discs. All you have to do is burn the disc at a slower rate, as some older CD audio players just can't handle discs burned faster than 24x.

Also, make sure you're actually burning your discs as audio CDs instead of data CDs. Some players can't read files with certain audio extensions (like WMA) but will more than happily read CDs that have been burned to a strictly audio format.

WHERE'S MY KEYBOARD?

I have a PC that is a couple of years old. The problem is that the keyboard doesn't work 99 percent of the time. The POST screen sometimes goes so far as to say "no keyboard detected." I have tried multiple keyboards, including PS/2 and USB ones. I tried clearing the CMOS and letting the BIOS reload to its default settings, but no luck. Am I looking at a bad motherboard, or is there another problem?

—David Downie

Hot-plugging a PS/2 keyboard in can very well fry the keyboard controller chip or super I/O chip on the motherboard, but that shouldn't affect a USB keyboard.

Your problem might not be a keyboard issue, though. It's possible you blew the PS/2 controller, which would cause PS/2 board problems. Your USB keyboard problems could actually be related to the vintage of your motherboard. You didn't say what model you have, but it sounds old as dirt.

It's also possible that your BIOS is not correctly configured to recognize a USB keyboard. Just to make sure the problem is not the OS install (it doesn't sound like it is), boot the machine using a Windows 98 boot disk (available from www.bootdisk.com) and see if the PS/2 keyboard works fine in Windows 98. If it does, your OS may be wonky. More than likely though, you'll have to replace the board.

RENEGOTIATING THE REINSTALL

I am currently running Windows XP on an MSI 945P Neo2-F motherboard with a single-core processor. The motherboard does not support a Core 2 Duo processor. I want to go to a dual-core system but want to do so without the headache of having to reinstall Windows.

I was thinking of buying a Neo3 board with a Core 2 Duo processor and replacing my existing motherboard and processor, using all the same memory, peripherals, etc. The only difference in the new system would be that it would have the Neo3 board with the Core 2 Duo processor.

My question: What are the chances that the Neo3/Core 2 Duo system would need a reinstallation of Windows, and is there a way of making the change without getting the BSOD?

—Pete Mac

You actually stand a very good chance of transferring your system over without having to reinstall Windows. Although this method is not recommended, it works for many people nonetheless. The Doc doubts that the BIOS issue would impact a reinstall and knows people who have successfully migrated from one CPU/chipset platform to another without any complaints.

You may have an issue with XP activation. If you are running a full retail version of the OS, transferring the activation will not be an issue. If you are running an OEM version, there is a small chance that Microsoft will deny the activation.

If that happens, all isn't lost. OEM copies of the OS are tied to the motherboard. When the motherboard dies, the OS is supposed to die as well. Just tell the guy on the phone that you're replacing faulty hardware, not upgrading.

AN UNSURE UPGRADE

I'm thinking of upgrading my eMachines T2865, so my son can play PC games like Rise & Fall. I've been looking at all the different videocards out there, and I'm totally lost on what type of card to buy. Is there a site like Crucial.com that I can use to find out what types of cards my machine can handle?

—Rick Musgrave

Short answer: no. Long answer: no—because figuring out your path to a videocard upgrade is a lot easier than you think. In your case, the motherboard in your eMachines comes with only an AGP slot, rather than the PCI Express interface of modern-day motherboards. Consequently, you'll want to be on the lookout for videocards that are AGP based. While these cards won't perform as well as the best of the PCI Express models, they are more than adequate for your Rise & Fall needs.

With that said, we recommend you upgrade your entire system rather than spend money on a dead spec. If you insist on sticking with AGP, you should look for cards based on Nvidia's 7600 GS chipset. And since you brought it up, you might want to head on over to www.crucial.com and start gathering information for a RAM upgrade—at 512MB, your eMachines system is going to chug when it comes time for a little Rise & Fall action. A great videocard goes a long way, but not when its speed is being bottlenecked by other parts of your system!

UPGRADE INDIGESTION

I recently upgraded my computer with an Asus P5ND2-SLI motherboard, a 2.8GHz Pentium D processor, and an XFX GeForce 7600 GT XXX Edition videocard. I kept my old 420-watt power supply, optical drive, and hard drive. My new computer runs fine, except for these problems: 1) My keyboard and laser mouse don't power down when I shut down my computer (the keyboard's F-Lock light stays lit, as does the mouse's laser). 2) My hard drive appears when I click the "Safely Remove Hardware" icon in the Windows toolbar. This isn't really a problem, but it's annoying. 3) When I plug my MP3 player and flash-memory USB drive into my USB port, the computer reports that they've malfunctioned. What's your diagnosis?

—Josh Li

The Doc's diagnosis is that there's probably nothing seriously wrong with your rig. If you simply plugged your old hard drive into the new system, you're asking for trouble; you should consider performing a clean install. If that's not the case, see if these remedies alleviate your problems: The mouse and keyboard issues are probably due to having the BIOS option to wake on mouse or keyboard enabled (the computer can't sense them unless they're powered up). If disabling this setting in the BIOS doesn't resolve the problem, the motherboard might be designed to provide power to certain USB ports even when the rest of the machine is shut down. Try switching USB ports.

You might be able to solve your hard drive problem by uninstalling your nForce drivers and reinstalling the latest version. The Doc has heard of this issue before, typically when SATA drives are installed but the user has also installed Nvidia's IDE driver. If driver reinstallation doesn't do the trick, try running your system without the IDE driver. Finally, USB port failure is a common symptom of overclocking gone too far. If you're not overclocking, or if resetting to stock speeds doesn't clear things up, you should consider performing a clean install of Windows XP. You don't need USB 2.0 drivers if you've patched XP with Service Pack 1 or 2, so don't install them if you have.

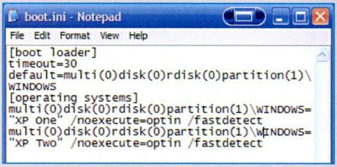
JUST GOTTA GAME

I am a poor college student, and I thrive on playing old PC games. In particular, I like to play Deus Ex. The problem I have is the game spontaneously changes the speed at which it runs. I played it on an older computer and it ran fine; the problem occurs when I run it on my laptop. The video usually runs faster, but it sometimes runs at normal speed. For instance, sometimes the text on the screen scrolls faster, but the audio plays at the normal speed. The characters also run faster and perform actions faster, but the most annoying part is the spontaneous changes and the audio cutting out early. I'm trying to run it on a Dell Inspiron 5150 with Windows XP Pro.

—Ross Sermersheim

It sounds like your problem might be related to Intel's SpeedStep technology, which automatically shifts your CPU speed up or down to conserve power. To disable SpeedStep, open your Power control panel and switch the power profile to Home/Office Desk or Always On. That will disable SpeedStep.

THE DOCTOR IS IN!



```
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(1)\
WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS=
"XP One" /noexecute=optin /fastdetect
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS=
"XP Two" /noexecute=optin /fastdetect
```

Make sure you nuke the right line in the boot.ini file—otherwise, you will not be thrilled with the results.

WHICH WINDOWS?

I recently put together a new computer with Windows XP. When I moved my old hard drive over to the new case, I somehow got two versions of Windows installed. When my computer boots, I have to pick which one to start. How do I get rid of the second Windows option?

—Brian Matthews

Ahh, an irritating problem indeed. Thankfully, there's an easy solution. Hop on over to your Windows control panel and fire up System Properties. Click the Advanced tab, which should give you three additional options and three corresponding settings buttons to pick from: Performance, User Profiles, and Startup and Recovery. Click the Settings box under Startup and Recovery, and on the following window, hit the Edit button that corresponds with the prompt to manually edit your startup options.

Just in case something goes wrong, copy everything from the file that pops up (your boot.ini file) and paste it into a new text document. Now, look for the "[operating systems]" subhead in the file. The name of each XP option rests in quotes, so replace "Microsoft XP Professional in each entry with "XP One" and "XP Two." Restart your computer and boot from each—you want to figure out which option to keep. After you've done that, go back to the boot.ini window you were at earlier. To delete one of the boot options, just delete the entire chunk of text that corresponds with the nonworking option—the line starts with the phrase "multi." As long as you delete everything, you'll be fine.

D-V-IVERS

I have a Dell 19-inch LCD monitor. Will an Nvidia GeForce 6600 OC graphics card support this monitor's DVI input with the drivers on the installation CD or will I have to download another driver from the Nvidia website?

—Gene Macavey

You won't have any problems running the monitor with your bundled graphics card driver, but as a general rule, you should run the latest graphics driver available. Check Nvidia's website for the most recent version.

COMPOUND SOUP

I accidentally mixed a metal-based compound with a ceramic-based compound and applied it to my processor. Will this screw anything up?

—Andrew Vance

Most thermal pastes are intended to be used by themselves and are likely more effective that way. However, like peanut butter and chocolate, the two together are unlikely to harm anything. If the machine is not overheating and the two compounds didn't meld to form a molecular acid, you're probably fine.

CALL OF THE BLUE SCREEN

My PC crashes with a fatal blue screen after playing Call of Duty 2 for 15 to 20 minutes; the screen doesn't stay up long enough for me to read what it says. I'm running a Gigabyte GA-K8N51GMF-9 mobo with an AMD Athlon 64 3200+ CPU, 1GB of RAM, and an EVGA GeForce 6800 GS videocard. I took the rig to my local geek shop, and they recommended I get a more powerful power supply. I upgraded to a 620-watt model, but it didn't solve the problem. Gigabyte's and EVGA's tech support people have both said the problem is a hardware conflict, but neither has a real solution for me.

Can you help?

—Patrick Patton

The problem you describe typically results from excessively aggressive overclocking. If you're overclocking the videocard, stop; if you're overclocking the CPU, stop. The power supply is another of the usual suspects; but because you've already upgraded, it's probably not the source of your trouble unless you bought one of very low quality. You should also review the thermal conditions inside your case. Open the case and point a room fan at it. If the system stops crashing, you've found the culprit. You might need a more powerful heatsink on your CPU, new thermal grease, or additional fans to bring down your components' temps. If that still doesn't fix the problem, test your memory using memtest86+, which you can download from www.memtest.org.

THESE TWO MONITORS ARE GR… <BZOOP>

I have two 7800 GTs running two NEC MultiSync LCD1760NX monitors and a Cintiq 21UX. Whenever I'm forced to restart my computer, the second NEC monitor will come on and then go black, as if in Sleep mode. If I turn the monitor back on immediately, it will stay on for a varying amount of time before going black again. I've dug through every Display Property setting and built-in monitor setting trying to correct the issue, but in the end I have to turn the monitor off for a few minutes and then turn it back on hoping it will stay on.

—Woody Hearn

Since you're describing an intermittent problem, the Doctor assumes you know that when you run both 7800 GTs in SLI, one of the two displays will go dark. This is the standard MO for SLI. Intermittent problems like this are always a bear to solve, but you might first try swapping cables. It's possible that the monitor isn't sensing that it's connected to your videocard and is therefore going into an energy-saving sleep state.

CONGRATS, IT'S TWINS

Is there a performance advantage to having the second SLI card match the first SLI card in every way? The rig in question now runs a PNY Verto GeForce 6800 GS overclocked on an Asus P5ND2 motherboard.

—Edward Cotter

Nvidia did away with the requirement to pair videocards from the same manufacturer some time ago. Both cards must have the same GPU, but they can be from different manufacturers; they can also run at different clock speeds. Since one card will be doing the compositing work (combining the output of both frame buffers and outputting it to your display), it makes sense to put the faster of the two cards in the primary SLI slot. You should also make sure you're using the latest videocard and chipset drivers before proceeding with your upgrade project.

VISTA ACTIVATION ODDITIES

I bought a copy of Vista, ran home, and installed it. For a number of reasons—an inability to find the right drivers, system slowdowns, fear of losing my key because of over-activation, and plain laziness—I never activated it. When I finally felt I could live without my copy of XP, I attempted a clean install. When I tried to activate Vista, I got an error message that said my key was for an upgrade only, not a clean install. Was I supposed to reformat, install XP, then install Vista?

—Patrick Ignaczak

The Doctor would like to welcome you to the ever-confusing world of product activation and OS versions. In this case, you have clearly purchased an upgrade copy of Vista. In theory, you're supposed to install that overtop your XP installation, as the disc will prevent you from installing Vista on a wiped—or "clean"—drive.

That said, there is an ingenious workaround to the issue. Install Vista, but don't enter a product key when prompted. This will get you a 30-day trial version of the OS. Once it is up and running, fire up your upgrade disc and install Vista once again, entering your product key when asked. You'll get a fresh, clean installation of the OS without ever having to touch XP.

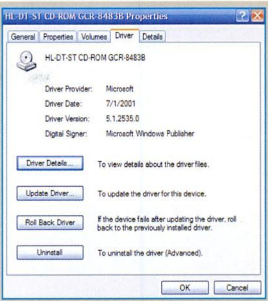
SPLINTER CELL: PAINFUL SCREECH

I am running two 8800 GTX cards in SLI on an Asus P5N32-SLI Premium mobo with two gigs of RAM and an Intel Core 2 E6700 overclocked to 2.93GHZ. I have a Sound Blaster X-Fi Xtreme Music soundcard. After I load Splinter Cell: Double Agent the sound dies after a few minutes and is replaced by a loud, high-pitched squeal. I have to reboot to get rid of the noise. Interestingly, if I disable SLI, the game will run without this sound occurring, but the frame rate drops dramatically. I have tried reinstalling both the game and the soundcard drivers many times, but that has not fixed the problem. I have only one available PCI slot, so installing the card in a different slot is not an option. I do not have this problem with any other games.

—Daniel Guerand

Daniel, you're running into a problem that's often reported to the Doctor but that he has never been able to reproduce. According to Creative, the problem occurs because certain motherboard BIOSes incorrectly enumerate add-in cards. Some people describe the sound as a "screech of death" while others call it a "snap, crackle, pop." The majority of problems have occurred with nForce chipsets, but the issue is not limited to that part. Back in the Voodoo2 SLI days, many soundcards were blamed for screeching and popping sounds as well. The problem, called bus hogging, happened because the graphics card would hog the PCI bus and not release it (remember, it's a shared roadway) within industry-standard specs.

The Doctor suspects a similar problem is happening in this case, but as he said, he has never experienced it using X-Fi cards and nForce or Intel chipsets. That doesn't mean you're totally hosed. Some people have reported that updating the board's BIOS corrects the problem, while others say that the latest drivers from Creative will do the trick. The Doc recommends that you grab the latest BIOS for your Asus board and run the auto-update program from the support section of Soundblaster.com.



HL-DT-ST CD-ROM GCR-8483B

Driver Provider: Microsoft

Driver Date: 7/1/2001

Driver Version: 5.1.2535.0

Digital Signer: Microsoft Windows Publisher

To view details about the driver files.

To update the driver for this device.

If the device fails after updating the driver, roll back to the previously installed driver.

To uninstall the driver (Advanced).

If you're using alternate drivers for your optical drive, don't. Windows XP should automatically be able to configure any disc reader you have.

A DUSTY DVD COLLECTION

I recently removed my DVD drive from my PC to reinstall Windows on my son's PC, as his CD-ROM drive was too slow. When I put the drive back in my PC, the BIOS was able to see the drive, but I could not get it to work (it doesn't show up in Windows Explorer, and bootable CDs won't boot on my computer). I bought a new DVD drive, but it doesn't work on this computer. And, yes, I reinstalled the drivers from both manufacturers.

I had another hard drive and was able to reinstall Windows (using the same DVD drive on the same computer), and everything is working fine now. I would like to put the old hard drive back and put the whole system back the way it was, but I still do not understand why Windows refuses to recognize the DVD drive.

—Roy Bellon

It's a little tough to diagnose your problem without knowing which motherboard and OS you're running and the make and model of the optical drives. Still, the Doc will take a stab at it. The fact that you were able to reinstall Windows on your PC using a different hard drive indicates that your problem is with Windows and not a hardware problem. If you are running Windows XP, you do not need drivers for the optical device. You should uninstall any drivers that you installed, as they are for older operating systems. If you recently installed a game that uses StarForce protection, that may also be an issue, as it is notorious for wreaking havoc on optical drives.

Finally, your problem could be as simple as a bad cable or a bent pin on the drive. You should also double-check the jumpers on both drives on the chain and try both cable select and slave and master to see if that solves your problem.

BRING ON DA NOISE!

I bought a PNY 6800 GS 256MB AGP graphics card, and I like the way it works; but man, it sounds like a vacuum cleaner stuck on high. Is there any way to dampen the noise? It's killing me, and if I can't take it down a notch, it has to go!

—Bob Lee

You might consider installing an after-market cooler. We really liked Arctic Cooling's Accelero X1 when we reviewed it last May (you'll find the full review at MaximumPC.com). You might also consider moving up to the 7800 GS AGP. We've not reviewed the AGP version of this card, but the PCI Express model is sweet and very quiet.

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FLOPPING MOLLY

I recently received a Gateway MX6214 notebook computer for my birthday, since I've been a pretty good boy. I deleted everything from the HD, but when I tried to install XP Professional, the procedure stalled. After considerable investigation, I realized this happened due to a driver issue that pertained to the Serial ATA controller, which you install by pressing F6 during the XP setup procedure. One problem… XP will only allow the driver to be read from a floppy disk, and this Gateway model came without a floppy drive.

—Stan Evans

Fortunately, you have three options available. Unfortunately, none of them is as easy as just copying the drivers to a USB key in place of a floppy. Thanks, Windows XP.

Option one: Buy Vista. Microsoft's new operating system lets you load drivers from a floppy, hard drive, or USB dongle. Your problem's gone, just like your wallet, as your cash flies to Redmond.

Option two: Pick up a Microsoft-approved USB floppy drive (see http://tinyurl.com/yyfc34), so you don't have to muck around in your case or notebook to install an actual floppy drive. This will set you back around $20—a small price to pay for a successful XP installation.

Finally, you can slipstream a Windows installation CD, which will automatically install the appropriate drivers, sans floppy disk. The Doctor recommends using the nLite utility, which will do a lot of the heavy lifting (www.nliteos.com).

BAD TO THE BOOT

I recently purchased a new bigger, better, badder hard drive: a 500GB Seagate 7200.9. I used the Seagate utility to migrate everything from my 120GB Western Digital WD1200JB and then set the Seagate as the primary drive and the WD as a secondary drive. Now, my previously stable system is... not. I can't even attempt a repair install of Windows, as I get a Blue Screen of Death stating, "Unmountable_boot_drive."

—"hgdragon"

The Doctor is assuming that by migrate, you mean moved instead of cloned. Either way, the solution to your problem—a corrupt hard drive—is the same. Since Windows is going crazy, the Doc recommends going with a fresh wipe/installation. Before we get elbow deep, however, see if you can get into the recovery console by booting up from the Windows CD. When there, type `chkdsk /r` **and hit Enter. When that's done, type in** `fixboot` **and hit Enter. Restart your computer and see if you can run a repair—or fresh—install of XP on the Seagate drive.**

If that doesn't fix the problem, you'll need to reconfigure your Western Digital drive as the primary (master) and disconnect the Seagate. If you haven't already, format the drive and install a fresh copy of Windows. Once it boots, shut the computer down and connect your Seagate as a secondary drive (slave). Start the computer up again, and when you get to Windows, go to Explorer. If the Seagate doesn't pop up, check Disk Management (Control Panel > Administrative Tools > Computer Management) to make sure it's initialized and assigned a letter. Once it appears in Explorer, copy over all the files you want to save from your Seagate to your WD, then right-click and format the Seagate.

Once that's done, go back and make the Seagate your primary drive and the WD your secondary drive. Boot to your Windows CD and you should be able to install a fresh copy of Windows on your new Seagate drive. When that's done, copy your important files back to the Seagate and you're set!

C IT AIN'T SO

My hard drive gave out, so I installed another one. When I formatted and installed Windows XP Professional, I didn't realize that my FireWire drive was plugged in. Needless to say, I couldn't understand why I was having problems installing certain software, as well as printers. Then it dawned on me: The internal drive was formatted as E instead of C.

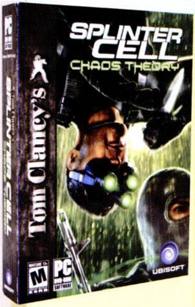
How can I restore this hard drive to C without going through hours of formatting and installation?

—Karen Brown

Normally, when one of your drives or devices is showing up incorrectly, reassigning the letter just takes a few clicks in the Computer Management screen under the control panel's administrative tools.

Unfortunately, there's not much you can do in your case. If you try to reassign a drive letter to a boot disk, Windows will warn you that "Windows cannot modify the drive letter of your system or boot volume." In short, installing Windows on a lettered drive sets up a large number of registry settings and configuration files that all point to said drive as the place where Windows is located. Changing the drive letter is akin to breaking a ton of shortcuts and would surely cause Windows to crap out.

Alas, the Doctor isn't a fortune-teller, but he sees a formatting in your future—a formatting and a Windows reinstallation. Make sure you disconnect all of your external storage peripherals this time!



It's too late for *Splinter Cell: Chaos Theory*, but UbiSoft fortunately stopped using StarForce copy- protection in its games as of May 2006—it's known to wreak havoc on PCs.

STARFORCE SCOURGE

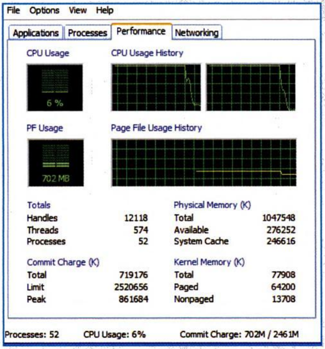
Last spring, the optical drive in my two-year-old Panasonic laptop started to fail. It would have cost $900 for a replacement DVD-combo single-layer 1X drive (and void my warranty), or I could send my laptop in for repair, which would have been a great hardship for my business. So after reading the April 2006 "Build Your Own Laptop" story, I replaced the optical drive in my laptop with a DVD double-layer writer as shown, using the same NEC drive, ND-6750A. All went well, except it takes 30 seconds longer to boot, will not boot from CD, and worst of all, when I change out discs for data reads, "My Computer" hangs on opening and requires that I turn off power to reboot.

My workaround was to reboot the laptop when changing discs. Then I read the "Second Opinion" by Chad Greiner in the November 2006 issue and I was enlightened. I had a game or two that used the StarForce copy protection scheme. First I deleted the StarForce drivers from Device Manager ("Show hidden drivers"). No joy. So I set another restore point, edited StarForce out of my registry, and moved the drivers out of Windows. After reboot I started the game; StarForce reinstalled (reboot again). The hanging problem with "My Computer" is now fixed, but "My Computer" still reports the optical disc incorrectly; it shows the disc that was loaded on boot as the current disc name. But that's minor. Thank you, Doctor.

—Johnnie Alderson

The Doctor agrees: StarForce is evil.

THE DOCTOR IS IN!



```
File  Options  View  Help
Applications | Processes | Performance | Networking

CPU Usage          CPU Usage History
6 %

PF Usage           Page File Usage History
702 MB

Totals                        Physical Memory (K)
Handles        12118          Total             1047548
Threads          574          Available          276252
Processes         52          System Cache       246616

Commit Charge (K)             Kernel Memory (K)
Total         719176          Total               77908
Limit        2520656          Paged               64200
Peak          861684          Nonpaged            13708

Processes: 52    CPU Usage: 6%    Commit Charge: 702M / 2461M
```

Want to see those cores in action? Ctrl-Alt-Delete, click Performance, and you should see two graphs under "CPU Usage History."

SHOT THROUGH THE CORE

I recently bought a Core 2 Duo laptop. I heard about the dual-core support issue in Windows, and a search online turned up a Windows XP hotfix from Microsoft and a registry hack to "properly" configure WinXP to better utilize the additional core. However, after installation, I found the fix did the opposite to my laptop. WinXP seems to have lost sight of the second core.

—Chenyang Xiao

There are a few Windows XP dual-core fixes, but not all of them are required, and not all of them address performance, per se. One XP fix addresses a USB power-leak issue that many incorrectly attributed to dual-core machines. The actual problem was a driver issue with XP that could occur on a machine with a single core and a particular Intel chipset. But the Doc suspects that you're talking about KB item 896256 "Computers that are running Windows XP Service Pack 2 and that are equipped with multiple processors that support processor power management features may experience decreased performance." From what the Doctor understands, this fix mostly addresses problems with AMD processors that could suddenly get an extra bit of voltage when coming out of a sleep state. You can probably live without this fix installed.

There is another fix that applies to Intel dual cores, KB923231, but this also seems to address a problem with machines coming out of a sleep state. Obviously, if the hotfix is not working for you, you should uninstall it and revert any registry changes you made. The Doc knows it's difficult to do, but sometimes, if something's working, you should leave it alone.

PSU FIGHTERS

I was troubleshooting my rig and ultimately determined there was a problem with my power supply. I'm up and running with a new PSU now, but I'm confused. Before swapping supplies, I checked the voltage on the pins (20/24 pin connector) while operating under heavy load. All the voltages looked good and were within a reasonable tolerance (i.e. +5 was +5.08). So how was the supply failing exactly? Was the voltage OK, but there was noise on the lines? Was I having voltage fluctuations, but they were too fast to see with my DVM? What is the typical failure mechanism? Any insight would be appreciated.

—Glen Miller

It really depends on what you mean by problem. Is your rig crashing occasionally in games? Not booting? Is there a burned electronics smell? This is all complicated by what kind of system you're running. Do you have an ancient Athlon XP or a fully loaded SLI system with five hard drives?

PSU problems the Doctor usually runs into involve the motherboard not posting and occasional crashing. The Doctor consulted with manufacturer PC Power and Cooling to learn what the top PSU problems are and found out that the majority of power issues are related to how power is distributed in a system. Even though a high-wattage PSU may be rated for a certain spec, that power is often split into compartmentalized rails in the unit. Although the total power the system draws may not overload the PSU's rated capacity, the individual rails can still be overloaded. In essence, your PSU may be fine, but how your system is configured to suck power from it could cause failures. It is possible there is noise on the line; as the power load increases on a PSU, noise levels may increase if the unit isn't a high-quality PSU.

EXTERNALLY CURIOUS

I am buying an external hard drive and will install Windows XP on it. I plan on using it as a portable OS when I use other PCs. Will the external drive have conflicts with other PCs when I use it?

—Alfred Braxton

Well, provided you don't mind a bit of a speed choke, you'll be perfectly fine installing XP on an external drive. The Doctor is assuming, of course, that you're using a standard USB connection to hook the drive to a computer. If your external device uses an eSATA connection, you'll see no performance difference whatsoever—it would be as if you were using a drive nestled in your machine to boot XP.

That said, you won't be able to use said external drive as a "local" copy of XP for machines you connect it to. Remember, XP installs a ton of files based on the detected hardware of the machine it's attached to. Unless you plan on using your OS on machines that are all identical, you're going to run into a nightmare of compatibility issues that will prevent XP from running in the first place.

CUT. IT. OUT.

I'm writing because you are my last hope for a solution to a sound problem I've been struggling with for more than a year. It's simple, but annoying: Plugging a headset into my front-panel audio doesn't cut out the speakers. I have a Cooler Master Centurion 5 CAC-T05 case and an Asus A8V-E Deluxe mobo—there is no soundcard. Suggestions?

—Clayton Curtis

The Doctor thinks it is likely an issue with how the shop wired up the AC97 front-panel header on the system or how the driver is configured on the board. The Doctor believes that particular case has separate header jacks for AC97 audio and HD audio. The A8V-E Deluxe features AC97, so you should use that jack, not the HD audio jack. You'll also want to poke around the control panel for the onboard Realtek ALC850 the A8V-E Deluxe uses. Some onboard audio drivers include an option to mute the speakers when a headphone is detected.

TIME WARP

I am working on upgrading to Windows Vista Ultimate from Windows XP Media Edition and find that many drivers have not been developed to support my home network. I am afraid I had not read the article that recommended doing a clean install and instead did an upgrade installation. I was told that Vista would allow me to pick my boot drive, so I could switch between operating systems. If this is not possible, could I connect power to just the one I want to boot from?

—John Felice

You can have both XP and Vista running on the same hard drive. In fact, you can install them on different drives, if you so choose, and use your motherboard's BIOS (or key command, if it has one) to select which drive gets the boot.

Unfortunately, as the Doc understands it, you've already gone and installed Vista over your XP installation. While it's certainly possible to slap XP on a separate partition, or even a separate hard drive, the Doc has noticed quite a few users having trouble doing so. Specifically, it appears that the XP installation overwrites the Vista boot manager, which obviously screws up the Vista boot process.

Your best bet is to copy your important files to another location or DVD and then wipe your primary disk and start with a fresh XP installation. From there, boot off your Vista CD and install the OS to your second hard drive. Now, whenever your system boots, the Vista boot menu will give you the lovely choice of which OS you'd prefer to use. And ideally, each OS will be self-configured to see the drive it's installed on as the primary, or C, drive and the other as the secondary, or D, drive.

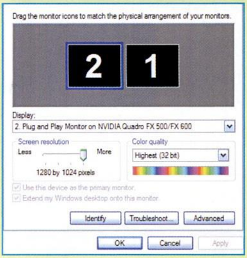
A POLK IN THE EYE

I built a gaming rig that includes an X-Fi XtremeMusic soundcard, which supports SPDIF in/out. Rather than investing in a new speaker system, such as the M-Audio LX4, I wanted to use my Polk Audio surround-sound speakers and Kenwood A/V receiver. In addition to saving some cash, I figured these speakers would outperform any PC speakers—including M-Audio's. I connected the X-Fi to the Kenwood with a digital coax cable and configured the X-Fi control panel to use a 5.1-channel setup and an external decoder. I then fired up **Battlefield 2**, *fully expecting to hear the Army roll into my living room. To my disappointment, I didn't get any sound from the rear speakers. What do I need to do to get surround sound out of this configuration?*

—Thomas Kischke

There's a solution for your problem, and it won't cost you much *if* your A/V receiver has six discrete, analog surround-sound inputs. Acquire three sets of cables that have 1/8-inch stereo plugs at one end and two RCA plugs at the other. Plug the 1/8-inch connectors into the X-Fi, plug the RCA connectors into your receiver, and configure the X-Fi to handle the decoding. If your receiver doesn't have these inputs, you'll need to buy another component for your rig: Creative's Home Theater Connect DTS-610. Connect the analog surround-sound output from the X-Fi to the DTS-610, and then route the digital output from the DTS-610 to your A/V receiver using either an optical or coaxial digital-audio cable.

You should remember, however, that your Polk Audio speakers are designed to fill a living room with sound. If you're sitting closer to the monitor while playing games than you are while watching movies, you'll be out of the speakers' sweet spot and you might not get the surround-sound experience you're hoping for. Speakers such as the LX4 are specifically designed for near-field listening, so you can sit up close.



Drag the monitor icons to match the physical arrangement of your monitors.

Display: 2. Plug and Play Monitor on NVIDIA Quadro FX 500/FX 600

Screen resolution: 1280 by 1024 pixels

Color quality: Highest (32 bit)

☑ Use this device as the primary monitor.

☑ Extend my Windows desktop onto this monitor.

It's not the size of your videocard that matters; it's your monitor's resolution. And 1280x1024 just isn't that impressive nowadays.

POWER UP

This isn't something that needs to be fixed, it's just a question: I am thinking about upgrading my LCD monitor. Does it take a more powerful graphics processor to run a widescreen monitor than it does to run a regular 4:3 monitor?

—Steve Ruegsegger

The issue has more to do with native resolution than aspect ratio. LCD monitors look best when driven at their native resolution. More pixels requires more horsepower. A 19-inch display with a 16:9 aspect ratio and native resolution of 1440x900 has only 67,200 more pixels than a 17-inch display with a 4:3 aspect ratio and native resolution of 1024x1200, so you shouldn't experience a significant performance hit when you move up. Switch to a 23-incher—such as the ViewSonic VP2330wb we use to test videocards—and you'll see a major difference. That monitor has a 16:10 aspect ratio and native resolution of 1920x1200, so it has nearly twice as many pixels as either the 17- or 19-inch models in this example.

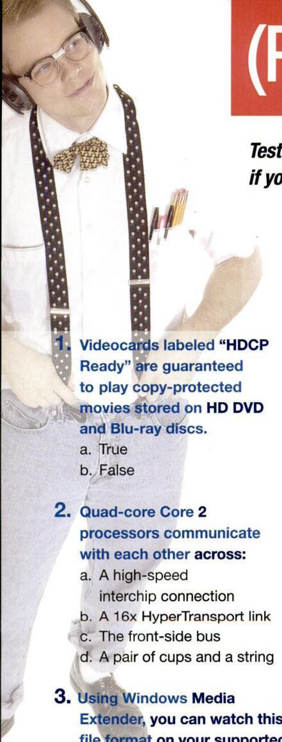
ANOTHER FINE MESS

I recently upgraded my system to an Asus P5WD-2E Premium motherboard, but my burners don't seem to be making the transition well. My Pioneer DVR104 says it has installed the drivers, and I enabled the "use DLA" option on the drive's properties menu, but none of my software can write to it. **Nero 6** *gives me a "SCSI command aborted" message, even though the drives are attached to the mobo's secondary IDE connector. The HP 640c driver installation complains that it "could not find a suitable IDE controller," and when I downloaded the latest driver from HP's website, it reported "no device found." How should I proceed?*

—John Maciula

You don't say which motherboard you upgraded from, but it sounds as though you plugged your existing hard drive into a motherboard that uses a chipset that's different from the one you had before. The ailments you describe indicate that you either haven't installed drivers for your new chipset, or that you've installed new drivers on top of the old ones. Windows gets very confused when its software environment doesn't jibe with its hardware landscape.

The Doc usually prescribes reinstalling Windows after a motherboard transplant (first save any crucial files to another drive or partition). You can get away without a reinstall once in a blue moon, but typically only in situations where both motherboards are based on the same chipset. If reinstalling Windows is anathema, you could try downloading the latest chipset drivers, uninstalling the existing chipset drivers (using the Add/Remove Programs tool in Windows' Control Panel), and then installing the correct drivers. But if that doesn't work, you won't have much of a choice.



(Pop) GeeK Quiz!

Test your troubleshooting smarts to see if you deserve a place among the geek elite

No self-labelled "Fix-It Genius" could feel worthy of such a title without being able to ace this pop Geek Quiz! Answer seven or more correctly and go to the head of the class. Fail, and it's summer school for you Mr. Would-be Geek!

1. Videocards labeled "HDCP Ready" are guaranteed to play copy-protected movies stored on HD DVD and Blu-ray discs.

a. True
b. False

2. Quad-core Core 2 processors communicate with each other across:

a. A high-speed interchip connection
b. A 16x HyperTransport link
c. The front-side bus
d. A pair of cups and a string

3. Using Windows Media Extender, you can watch this file format on your supported devices:

a. MPEG-2
b. AVI
c. MOV
d. DivX

4. The fastest external peripheral connection currently available is:

a. USB 2.0
b. FireWire 400
c. eSATA
d. FireWire 800

5. Which CPU features the largest cache?

a. Pentium Extreme Edition 840 (Smithfield core)
b. Athlon 64 FX-51 (Sledgehammer core)
c. K6-III (Sharptooth core)
d. Pentium 4 Extreme Edition (Gallatin core)

6. Which Intel chipset does not officially support 1066MHz front-side bus processors?

a. 925X
b. 955X
c. P965
d. 975X

7. You can't watch HD movies on your old DVI monitor because of:

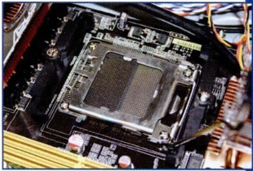
a. HDPC
b. HCDP
c. HDCP
d. ORLY

8. Which processor has the highest clock speed?

a. Core 2 Duo T7600
b. Athlon 64 FX-57
c. Pentium Extreme Edition 840
d. Celeron D 356

9. Which chipset supports dual x16 PCI-E for dual graphics cards?

a. Nvidia nForce4 SLI
b. Intel 975X
c. AMD 480X CrossFire
d. Nvidia nForce 590 SLI



10. What CPU was this socket designed for?

a. Athlon 64 FX-74
b. Pentium Extreme Edition 955
c. Pentium Core 2 Quad E6600
d. Opteron 265

ANSWERS:
1.b, 2.c, 3.a, 4.c, 5.d,
6.a, 7.c, 8.d, 9.d, 10.a

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Shuttle XPC SG33G5

Chipset	Intel® G33+ICH9
VGA	Intel® GMA3000 256bit 3D engine
Audio	Support DTS and Dolby Digital Live
OS	Support Windows Vista™ Premium
Overclocking	Dynamic OverClock
Dimensions (L x W x H)	12.2 X 7.87 X 7.28 Inch

* Monitor & peripherals are not included.

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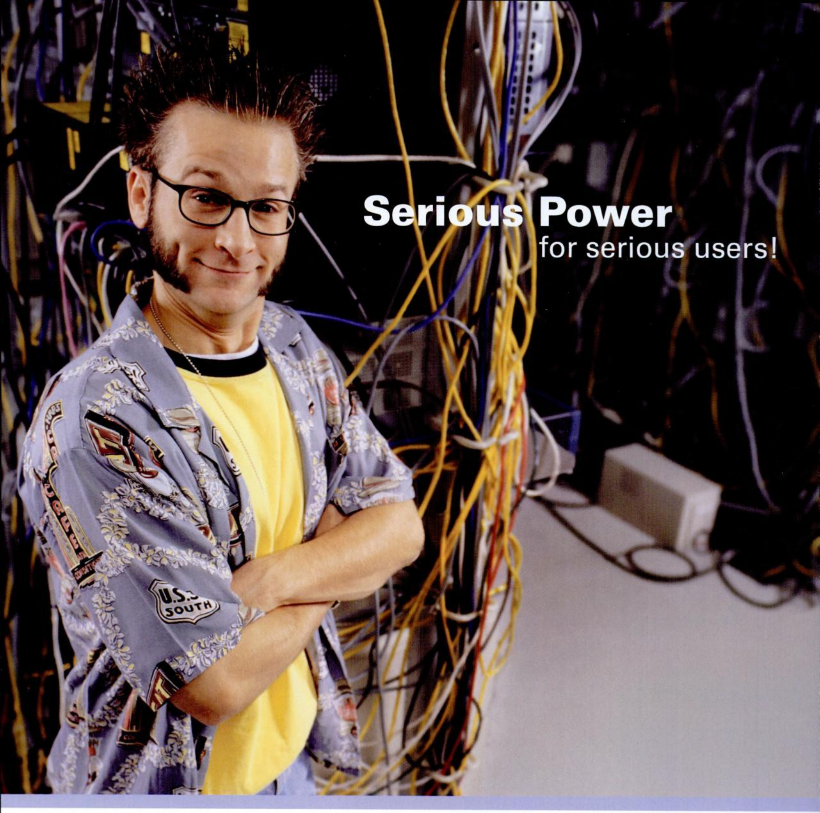

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430W/550W/650W

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